



# Module for Multi-Purpose Workers (MPW) - Female/Male on Prevention, Screening and Control of Common Non-Communicable Diseases





**Module for Multi-Purpose Workers (MPW) - Female/Male  
on Prevention, Screening and Control of Common**

# **Non-Communicable Diseases**

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Minister of Health & Family Welfare  
Government of India



#### FOREWORD



It gives me immense pleasure to write the foreword to the training module on Non-Communicable Diseases for Multi-Purpose Workers (MPW). As a frontline worker of the health system you have played a critical role in improving the indicators related to maternal and child health.

As you are aware, the burden of NCDs including hypertension, diabetes and common cancers is rising. NCDs now account for higher morbidity and premature mortality. This situation demands a quick response.

This module marks a milestone in the roles and responsibilities of the Multi-Purpose Worker or Auxiliary Nurse Midwife (ANM) as the female MPW is often called. The module has been developed to enable you to play a key role in the Government of India's programme for the prevention, screening of common Non-Communicable Diseases. This module provides MPW with the knowledge, skills and competencies to undertake the tasks of prevention, screening and follow up.

This module not only provides you an insight into technical content for these disease conditions but also addresses issues of health prevention and promotion in a comprehensive manner.

With this module, your task as a frontline worker also changes. You will undertake population based screening for early detection of common NCDs, and reach out to both men and women. The ASHA, who undertakes key functions such as social mobilization and other tasks related to outreach service delivery and home based care, will serve as support to you in not just screening, but also in following up those who are detected as being positive. You will also be expected to ensure a continuum of care for patients with these NCDs so that the treatment plan developed by the medical officer is followed.

I am confident that training in the module will equip you with the skills to undertake the array of tasks for NCDs. Your efforts will serve to strengthen the programme and its success hinges upon this.

(Jagat Prakash Nadda)



## About this Book

This module covers common Non-Communicable Diseases such as Hypertension, Diabetes and three common cancers (Cervical, Breast and Oral cancer). The focus of this module is on building the knowledge and skills of the Multi-Purpose Workers (MPW) in undertaking Population Based Screening, identification of cases for referral, follow up, recognition of complications, prevention and health promotion. This module can be used by the female or male MPW. However, while the content of the overall module is the same for both some tasks will be different, particularly those related to screening which the female MPW will have to undertake. It is expected that the ANM/MPW will work closely with the ASHA in her area. Together they form a front line worker team to serve the needs of the community. The content of this module will be covered in three days.

## Acknowledgements

This module was developed by Professor J.S. Thakur and his team at the Post Graduate Institute for Medical Education and Research, (PGIMER), Chandigarh. Thanks are also due to Members of the Technical Advisory Group for Non-Communicable Disease set up by the Ministry of Health and Family Welfare, Government of India for providing critical inputs. We also thank the Non-Communicable Disease cell and the Directorate General of Health Services who also manage the National Programme for Prevention and Control of Cancer, Diabetes, Cardiovascular Disease and Stroke (NPCDCS) for providing feedback.

Some sections of this module are excerpted and adapted from various sources. They are the Operational Guidelines and Training Manuals of National Programme for Prevention and Control of Cancer, Diabetes, Cardiovascular Disease and Stroke (NPCDCS), National Institute of Mental Health and Neuroscience (NIMHANS) and World Health Organization (WHO).



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# **Module on Non-Communicable Diseases for the ANM/MPW**

## **Introduction**

In the last ten years, India has seen many improvements in the health of women and children which include an increase in institutional deliveries, immunization coverage, improvements in maternal and child health, and reductions in maternal and child deaths. You as an ANM<sup>1</sup> have played an important part in such improvements.

As an ANM, you are the key front line worker of the health system in rural and urban areas. In the last ten years since the launch of the National Health Mission, (NHM), in many places, a second ANM has been added to the health system to improve the quality of services. In rural areas, you provide services through the sub centre and in the community through platforms such as the Village Health and Nutrition Day (VHND). In many sub-centers ANMs also provide midwifery services. In urban areas, you provide services through community outreach sessions at the Urban Health and Nutrition Day(UHND) and special outreach sessions. In urban areas, the first level of facility care is provided at the Urban Primary Health Centre (UPHC). In rural areas, the sub centre is the first port of call.

Currently the package of services that you provide are related to reproductive, maternal, newborn, child health, infectious diseases and nutrition. You may have noticed in your day to day work, that as the country has made progress in improving maternal and child health and infectious diseases such as malaria, tuberculosis and leprosy, your workload due to these conditions may have declined. However, we now face another significant challenge. This challenge comes from the increasing incidence of Non-Communicable Diseases (NCDs). They are increasingly replacing communicable diseases and maternal and child health problems as the leading cause of death and disease.

## **What are Non-Communicable Diseases?**

Non-communicable diseases (NCDs), also known as chronic diseases, do not spread from person to person. These illnesses take a long time to develop and do not present symptoms in the early stages. They require treatment for several years, and some require life-long treatment. There are several diseases which fall into this group of conditions. The main types of non-communicable diseases are diabetes, coronary heart disease, stroke, cancers, and chronic respiratory diseases (such as chronic obstructive pulmonary disease and asthma). They are diseases of long duration targeting men, women and children and people in all income groups. Some of these diseases progress slowly or cause chronic symptoms requiring long term care and control while others progress rapidly. People may look apparently healthy but they may still have these diseases. Tobacco and alcohol consumption are key causative factors, but there are many others, and you will learn about these later. One of the most serious concerns about Non-Communicable Diseases is that they affect people in the productive years of their life. Non-Communicable Diseases are a leading cause of premature mortality. Another cause of premature mortality, is

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<sup>1</sup> In this book, the term ANM is used throughout the text. The contents of this book are applicable to MPWs (Female/Male).

the increasing occurrence of injuries. They include both unintentional and intentional injuries- due to road traffic accidents, burns, workplace related injuries, and violence.

In India<sup>2</sup>, Non-communicable diseases (NCDs) contribute to 60% of all deaths. The four major causes of NCD deaths are:

- ◆ Coronary Heart Disease, Stroke, and Hypertension (45%)
- ◆ Chronic respiratory disease (22%)
- ◆ Cancers (12 %)
- ◆ Diabetes (3%)

In many parts of our country as you know, rates of infant, child and maternal deaths are high. We also have a high burden of disease and death from infections or communicable disease. Added to this, as you can see from the description above, we now have an increasing burden of Non-communicable diseases.

Most often, Non-communicable diseases originate from unhealthy lifestyles and adverse physical and social environments. Well-known risk factors include poverty, poor diets like intake of foods rich in fat, salt and sugar; physical inactivity, consumption of tobacco, excessive use of alcohol, and stress. We now know from research studies and experiences of projects in our country and from other countries that the burden of Non-communicable diseases can be reduced through effective preventive measures. The response of our health system is not just to identify and treat these diseases, but also address prevention and health promotion. The data<sup>2</sup> below show that these risk factors are increasing among our people.

- ◆ A 30-year old individual has a one-fourth chance of dying from any of the four major NCDs before the age of 70 years.
- ◆ Prevalence of tobacco consumption in India is 44.5% in males<sup>3</sup> and 6.8% in females<sup>3</sup>. Globally the prevalence of tobacco consumption is 22%.
- ◆ The consumption of pure alcohol (among those who are 15 years and above) has decreased according to NFHS 3 and 4.
- ◆ Rapid increase in obesity and overweight is seen, with prevalence of obesity increasing from 9.3% to 18.6% in males and from 12.6% to 20.7% in females<sup>3</sup>.
- ◆ Prevalence of hypertension has increased by 10% from 2010-2014.
- ◆ The level of physical inactivity among Indian adults is around 13%.

The government has been implementing the National Programme for Prevention and Control of Cancer, Diabetes, Cardiovascular diseases and Stroke (NPCDCS). This is now implemented through the NHM. In this programme, an important component is the examination of all individuals who came to the health care facilities for hypertension, diabetes and selected cancers. This is called Opportunistic Screening. Now the government is planning to expand the scope of the NPCDCS to undertake screening of

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<sup>2</sup> Burden of NCDs and their risk factors in India. Available at [http://www.searo.who.int/india/topics/noncommunicable\\_diseases/ncd\\_situation\\_global\\_report\\_ncds\\_2014.pdf](http://www.searo.who.int/india/topics/noncommunicable_diseases/ncd_situation_global_report_ncds_2014.pdf)

<sup>3</sup> National Family Health Survey (NFHS) 3 and 4 Fact Sheets, International Institute for Population Sciences, Ministry of Health and Family Welfare (MoHFW), Government of India.

all healthy women and men 30 years of age and above in the community or in a health facility nearby. This is also called Population- based Screening. As a key front line worker, you will have an important role in undertaking the screening. The ASHA will also work closely with you and be your link to the community. This module will help you to:

- ◆ Build your knowledge on the risk factors, prevention and control of common Non-Communicable Diseases.
- ◆ Understand the programme for Non-Communicable Diseases in your area and your own role in undertaking screening, detection, referral and follow up.
- ◆ Learn about how to coordinate with the ASHA to ensure community level activities including health prevention and promotion.
- ◆ Counsel individuals and families on modifying life style behaviours.
- ◆ Refresh your skills in measuring blood pressure and assessing random blood glucose.
- ◆ Gain competencies in estimating Body Mass Index, undertaking clinical examination of breast and oral visual examination of the oral cavity.
- ◆ Enable referral of those suspected with the common Non-Communicable Diseases to the Primary health Centre or the Community Health Centre.
- ◆ Be able to identify complications among patients with Non-Communicable Diseases and know where to refer them.
- ◆ Undertake follow-up of patients with Non-Communicable Diseases, support them to adhere to treatment and to make changes in their lifestyles.
- ◆ Understand the various reporting and recording formats required.

The module has four chapters.

Chapter 1	Roles and Responsibilities of the ANM
Chapter 2	Risk Factors for Non-Communicable Diseases
Chapter 3	Health Promotion
Chapter 4	Common Non-Communicable Diseases – Hypertension, Diabetes, Three Common Cancers



## Chapter 1

# Roles and Responsibilities of the ANM/MPW



In this chapter, we will discuss the key tasks that you will have to undertake in addressing Non Communicable Diseases. In order to understand your role, you also need to have an understanding of the entire programme.

The key components of the Prevention, Screening, and Control of Common Non-Communicable Diseases are:

-  Population Enumeration and creation of individual health records
-  Completion of Community Based Assessment Checklist (CBAC)
-  Community mobilization and Health Promotion
-  Undertaking screening at community or sub centre level
-  Referring those who are suspected of any of the NCDs to the Medical officer at the Primary Health Centre (PHC)
-  Follow- up of those who are diagnosed with any of these NCDs and ensuring that they adhere to the treatment plan.
-  Identify the warning signs of complications and refer to appropriate facilities
-  Maintain records and registers as necessary
-  Support the ASHA in her tasks related to the NCD prevention

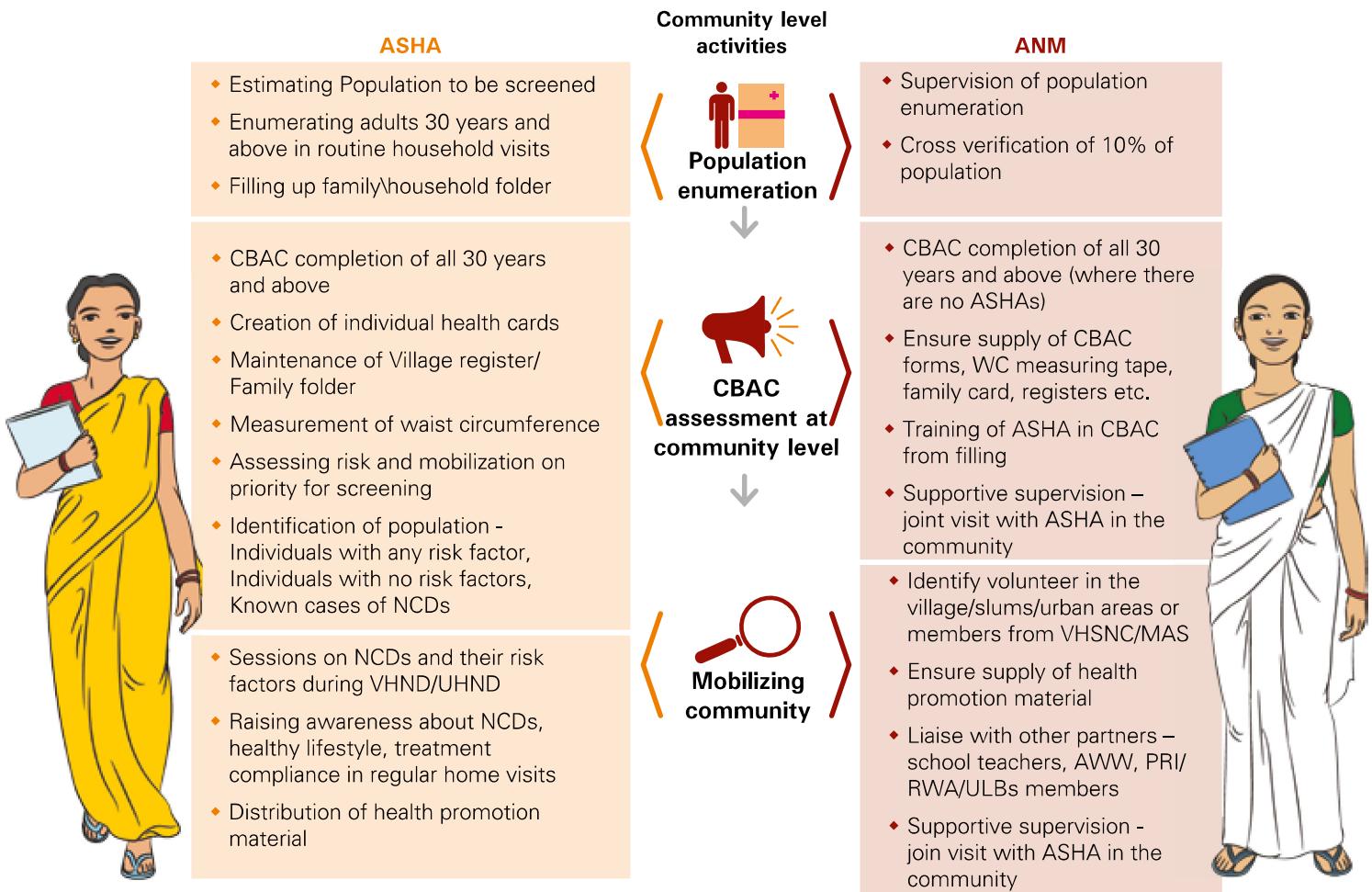
The target population for this programme are all adults (women and men) aged 30 years and above.

1.1 The Role of the ASHA and the Village Health, Sanitation and Nutrition Committee (VHSNC) and Mahila Arogya Samities (MAS in urban areas) The ASHA will play an important supportive role since some of the components listed above will need to be undertaken by her. As you know there is one ASHA for about 1000 population. In hilly areas and where there are hamlet based habitations, there may be one ASHA for a population of about 300-500. In urban areas there is one ASHA for about 2500 population. For every ten or twenty ASHA, in some states, there is also one ASHA facilitator to provide mentoring and handholding support to the ASHA. The ASHA and ASHA facilitators will work together with you as a team to implement this programme. The VHSNC/MAS will also play a key part in community mobilization and in undertaking activities related to health promotion and prevention. They will need regular guidance and support from you, the ASHA and the ASHA facilitator.

1.2 Figure 1,2 and 3 are Work Flow process charts for ASHA and ANM, and the division of responsibilities.



**Figure 1: Tasks of ASHAs and ANMs**



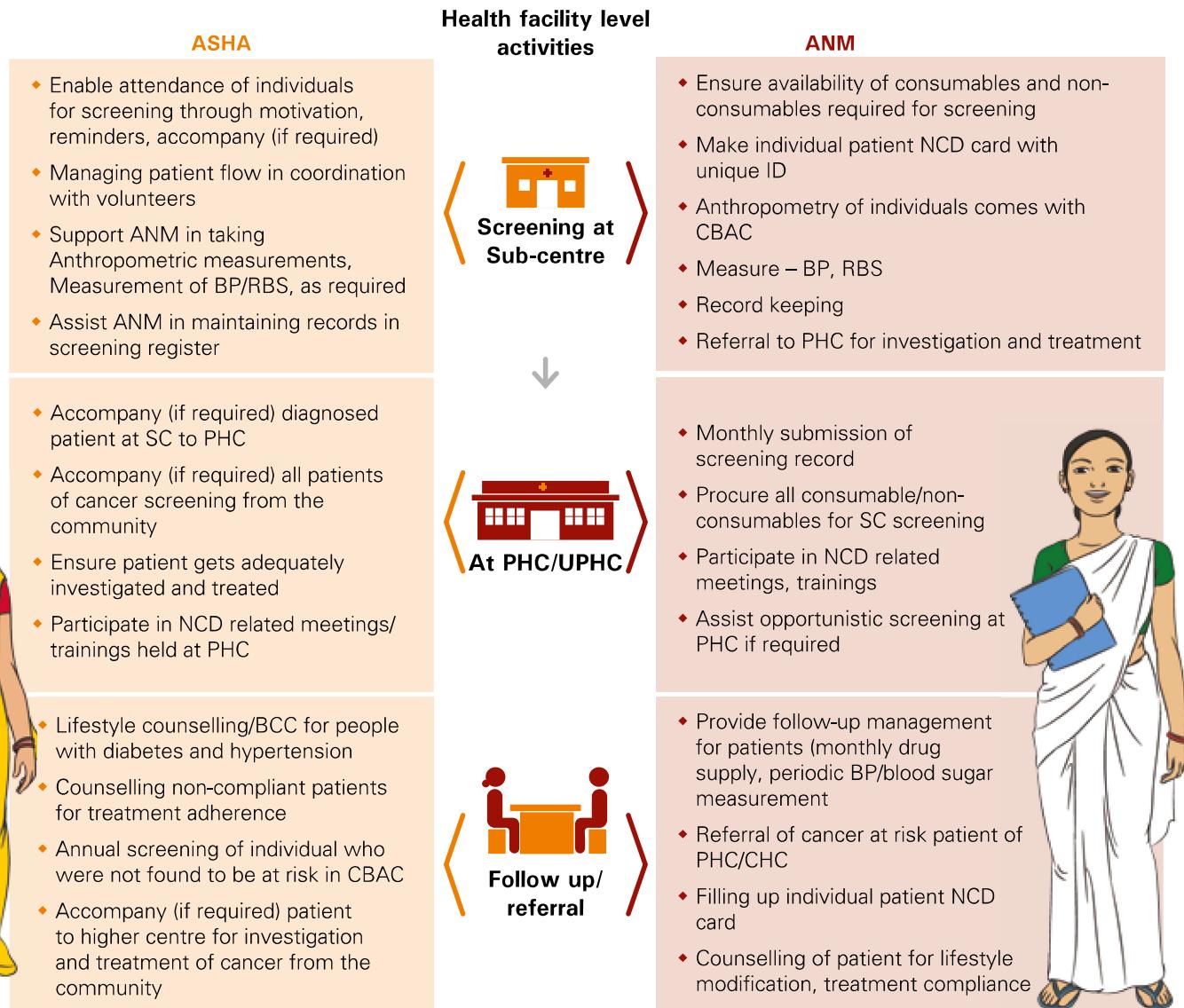
Your key tasks in prevention and control of Non-communicable diseases are as follows-

### 1.2.1. Population Enumeration to Cover the Eligible Population

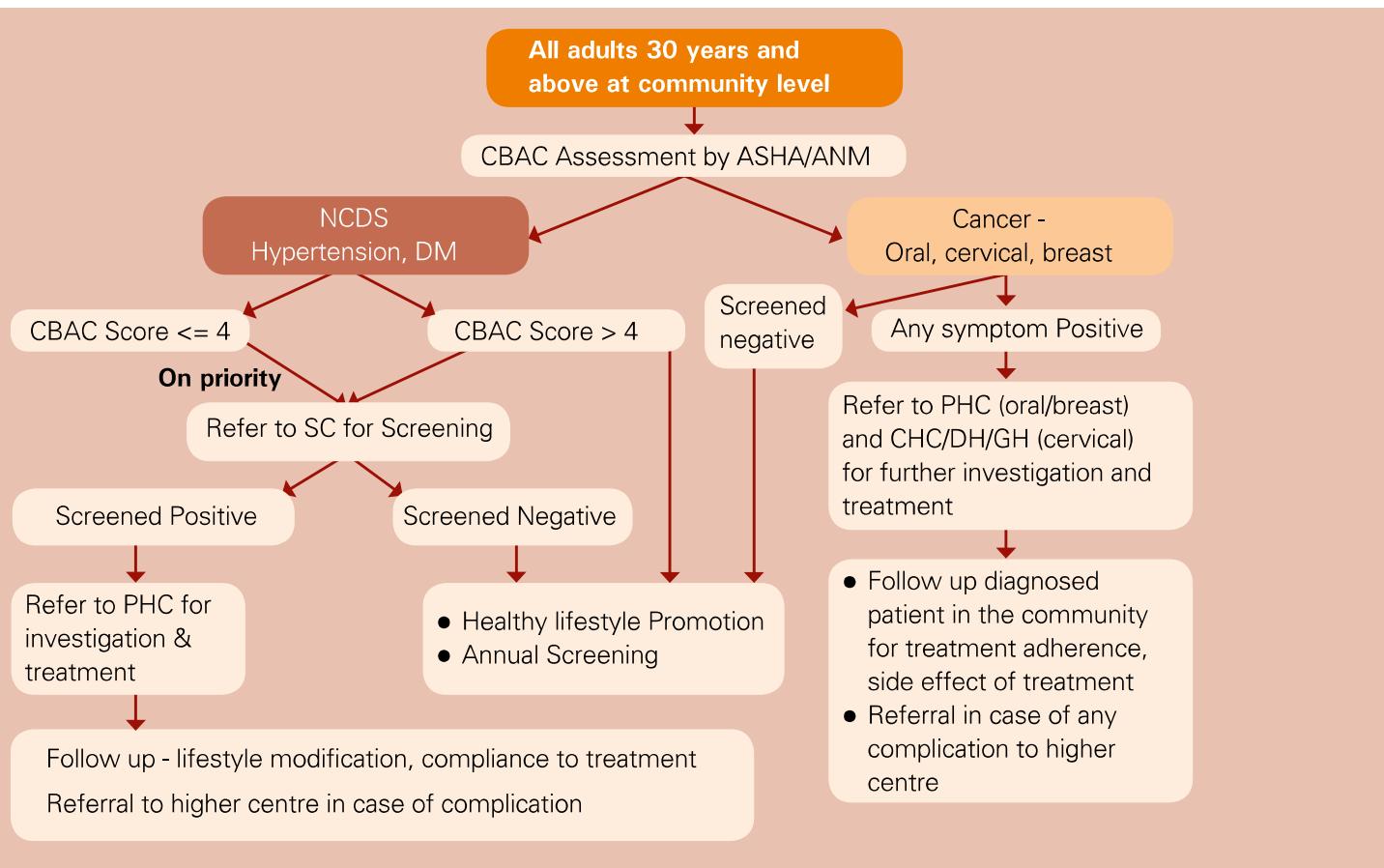
The ASHA is responsible for undertaking the Population Enumeration of all those aged 30 years and above through home visits. She will register or list all eligible adults, (women and men) fill in details specific to Non-Communicable Diseases and it will be updated every 6 months. She will be given a specific register to record this information. ASHA will also fill a health card for each individual, which will have a unique ID/ AADHAR number issued by the state/district. The card will record health events (screening/diagnosis/treatment/complications, etc.). This would enable follow-up by the medical officer at the PHC level, or at a higher level of facility. They will also record their treatment decisions and other findings on the card. This will help you to know the treatment plan for the individual thus help in ensuring continuity of care. The format to be filled by the ASHA is attached at Annexure- 1. Your task is to support the ASHA through field visits in completing this enumeration. You will be responsible for cross verification of 10% population. You will undertake enumeration in some areas where ASHAs are currently not available.



**Figure 2: Tasks of ASHAs and ANMs related to facility**



**Figure 3: Flow chart showing process of Screening and Referral**



### 1.2.2. Completing the Community Based Assessment Checklist (CBAC) for NCD Screening

The CBAC is designed to collect details related to history of symptoms and behavioural factors. They include tobacco and alcohol consumption, amount of physical activity, measurement of waist circumference, family history of high blood pressure, diabetes, heart disease and presence of common symptoms for common cancers, epilepsy and respiratory diseases. The ASHA is responsible for filling the CBAC (Annexure-2) for all women and men aged 30 years and above. CBAC is helpful to the ASHAs to remember



the key risk factors, helps identify those who must be prioritized to attend the screening day and refer the individuals. People with a CBAC score of 4 and above will need to be prioritized for screening. Your task is to review the completed CBAC filled by the ASHA in your coverage area to ensure that it is filled and correct. The ASHA facilitator can also undertake this task. You may also complete the CBAC in some areas where ASHAs are currently not available.

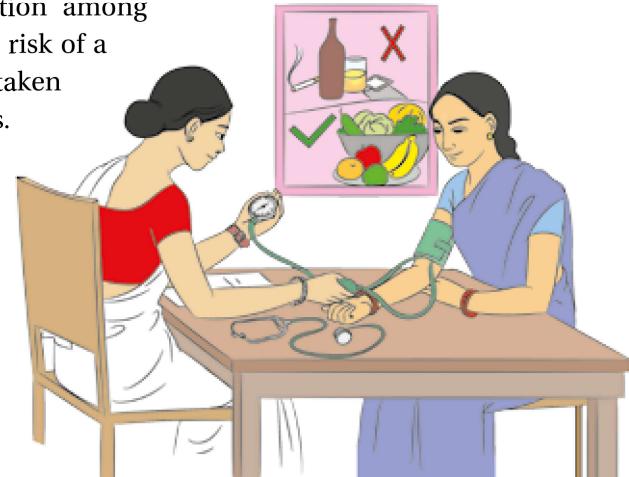
### 1.2.3. Community Mobilization

After completing the CBAC, you along with the ASHA will ensure that all those 30 years and above and particularly those who appear to be at risk for any Non-Communicable Disease are informed of the benefits of being screened and actively mobilized to attend the screening day. Along with you, the ASHAs, Anganwadi Workers (AWWs), Panchayati Raj Institutions (PRIs), VHSNC, Urban Local Bodies (ULBs), MAS, other community leaders and influencers, etc. should generate community awareness about the importance of screening programme; and notify the community about the screening day, time and site of the screening. Information, Education and Communication (IEC) material should be used in the form of leaflets/posters, etc.

### 1.2.4. Screening for Common Non-Communicable Diseases

Screening is a process of identifying a disease condition among apparently healthy individuals, who may be at increased risk of a disease or condition. Screening programmes can be undertaken for a population at large, or targeting high-risk groups. Screening serves a platform of increasing awareness in the community about common Non-Communicable Diseases, risk factors and the need for periodic screening. It also enables an understanding of better health and the need to avoid risk factors in the general community.

Screening requires careful planning and implementation. An important thing to remember is that once you suspect that an individual has a disease condition, the individual should be motivated to go the PHC or CHC and meet the concerned medical officer to confirm the diagnosis and start treatment. The health system should be ready to take care of those who are screened positive through diagnosis, treatment and care. Otherwise people will lose confidence in the process of screening. There are several steps involved in screening:



Early detection of common non-communicable diseases leads to better health outcomes. The ideal screening method should be simple, easy to do, cost-effective, and helps in early detection of the disease. It should be safe, non-invasive, reliable and acceptable to the population.

#### (i) Estimating the load of screening

Target Population (for screening)

- ◆ All men and women- 30 years of age and above for Oral Cancer, Hypertension and Diabetes Mellitus
- ◆ All women- 30 years of age and above for Cervical and Breast Cancer

In the box given below. You can see the number of people in this age category per 1000 population, which is the average population of a village and for which there is an ASHA. In reality, there may be more or fewer people per ASHA- but you can use this method to calculate the case load for your population. In a population of 1000, the proportion of people in the age group over 30 years, is about 37%, implying about 370 people (182 women and 188 men). In a normative sub-centre population of 5000, this would roughly mean about 1850 people.

- ◆ Approx. 37% of the population is over 30 years
- ◆ In a normative village of 1000: Total case load: 370
- ◆ No. of Men over 30 years = 51% of the total case load: 188
- ◆ No. of Women over 30 years = 49% of the total case load: 182
- ◆ For Hypertension and Diabetes: 370- (annual screening)
- ◆ For Oral Cancer: 370 – every five years
- ◆ For Breast and Cervical Cancer: 182 – every five years

Assessments have been conducted on the workload and work processes of ANMs across the country, in both single ANM sub centres and two ANM sub centres<sup>4</sup>. Approximately 30 individuals will be screened at a time on one day. It has been observed that by planning and organizing activities, one free day per week can be allocated to screening, prevention and control of NCDs. Thus, you can plan for your entire coverage area by allocating roughly one day per week to a particular village systematically until you cover the entire area. You will develop a calendar for the entire sub-centre area with the help of the ASHA in each village. In urban areas too, you will follow the same principle. The population here is larger, but here the PHC could serve as the hub for screening where you can get assistance from the team at the PHC to undertake the screening.

### **(ii) Setting up the Site of Screening**

- ◆ On a fixed day in a week you will undertake screening. The site of screening can be either the village itself or at sub centre (if the sub centre is near). In urban areas, this can be the site of the Urban Health and Nutrition Day (UHND) or the Urban Primary Health Centre (UPHC). But no matter where the location, you should keep the following principles in mind:
  - Screening of the common NCDs should be undertaken at a place that is easily accessible to all the members of the community, particularly women, poorest and other vulnerable groups and for the larger population.
  - Ensure that no individual needs to travel more than half an hour to reach the site selected for screening.
  - Screening should be conducted in a site where privacy is assured especially in case of women.

Every individual will be screened annually for Hypertension (High Blood Pressure) and Diabetes. For common Cancers, the screening should be done once in 5 years. Details about the method and frequency of screening is given in Table- 1.

<sup>4</sup> Guidebook for enhancing performance of Multi-Purpose Worker (Female) 2014; Ministry of Health and Family Welfare, Government of India.

**Table 1: Method and Frequency of Screening<sup>5</sup>**

Type of NCDs	Age of beneficiary	Method of Screening	Frequency of Screening
Hypertension	30 years and above	Blood pressure apparatus-Digital or Aneroid Sphygmomanometer	Once a year
Diabetes	30 years and above	Glucometer	Once a year
Breast Cancer	30-65 years	Clinical Breast Examination (CBE)	Once in 5 years
Oral Cancer	30-65 years	Oral Visual Examination (OVE)	Once in 5 years
Cervical Cancer	30-65 years	Visual inspection with acetic acid (VIA)	Once in 5 years (at the level of PHC to start with)

### (iii) Equipment required for screening

For measurement of blood pressure you will require a blood pressure (BP) apparatus (either digital or aneroid) and for measuring blood glucose you will require a glucometer. In most cases ANMs are already familiar with the apparatus since you measure both blood pressure and blood glucose for pregnant women as part of antenatal care. In addition, you will need to calculate Body Mass Index (BMI) of the individuals who come for screening. This requires weighing them and measuring their heights. You will learn about this later in this module. For screening of oral and breast cancer you will require to be skilled in visual examination. In the case of the oral cavity you will use wooden blades and a torch, and for the breast examination you will only need to use your hands. You will learn more about these methods in later chapters.

Screening for cervical cancers, for the first two or three years, in most states, will take place at the Primary Health Center (PHC) by a trained staff nurse or a lady medical officer. Over time, depending upon the readiness of the state, the sub centre can become a site for screening for cervical cancer as well. In some states, where ANMs can be trained, she can undertake the screening for cervical cancer at the sub centre.

You will need to ensure that all equipment in working condition required for conducting physical/clinical examination is available on the day of Screening. You must also be sure to recalibrate the BP apparatus and glucometer regularly at the PHC.

You may need to carry a “Field kit”, when conducting outreach sessions or visiting remote areas. A “field kit” will contain BP apparatus, Glucometer, wooden blades/mouth mirror, measuring tape, Gloves, Gluco-strips, Torch, cotton and spirit swabs.

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<sup>5</sup> Operational Framework-Management of Common Cancers, Ministry of Health and Family Welfare, Government of India, 2016.

### **1.2.5. Health Promotion**

Although you may think that a lot of emphasis is being placed on the actual screening and examination of individuals, health promotion is an extremely important component of NCD programmes. It is your responsibility along with the ASHA and other community level organizations to undertake health promotion activities. Promoting healthy behaviours is to support and motivate individuals, families, and communities to make necessary changes in improving their lifestyles. This includes cessation of tobacco and alcohol use, poor dietary habits, and lack of physical exercise, and participating in screening programmes regularly. This is a role that both you and the ASHA will undertake. Individual and family counselling will be needed for those who are put on treatment for compliance to medication and for lifestyle modifications. In addition to person-to-person, group health education and family counselling, platforms such as camps, campaigns, health melas, Village Health and Nutrition Day (VHND), Urban Health Nutrition Day (UHND), etc. can be an excellent platform to spread awareness about screening



day and healthy lifestyle practices for prevention of common NCDs. In some places, patient education leaflets, banners, posters, etc. can also be used a medium to spread awareness on healthy lifestyles at the screening sites. Strategies for health promotion will differ from state to state and even within states, but Health promotion should be central to the programme.

### **1.2.6. Referral**

During the screening day, you will identify suspected cases of hypertension, diabetes or cancers. You should refer such individuals to the nearest Primary Health Centres (PHCs)/Community Health Centre (CHC)/ District Hospital (DH)/General Hospital (GH) for confirmatory diagnosis by the medical officer or trained specialists. Laboratory confirmation for early diagnosis and management of such cases will be undertaken at the appropriate health facilities. Table- 2, provides details about the referral and follow up process for each of these conditions. An important fact to remember is that most of those who you may suspect of having a cancerous lesion, may not actually have cancer. You must counsel people that they should not assume they have cancer but should visit the specialist for further confirmation. You should be very careful when communicating the news that you have seen a suspicious lesion, so that you do not create panic and fear. You and the ASHA should also be very careful not to spread rumours in the community about who has been referred for further investigation. In most communities, sickness, particularly cancer, is considered to be a stigma. If news about those going to higher facilities for cancer or any other treatment spreads, and becomes public knowledge, this will destroy people's faith in you and in the public health system.

**Table 2: Referral process after screening and your role in follow up**

Condition	Finding during Screening	First level of referral
Hypertension	Systolic BP of over 140 and/or a diastolic BP of over 90 mm of Hg (140/90mm Hg)	Medical officer (MBBS) at the nearest facility, for confirmation, conducting relevant laboratory investigations
Diabetes	Random blood sugar over 140 mg/dl	Medical officer (MBBS) at the nearest facility, for confirmation, conducting relevant laboratory investigations
Breast Cancer	Suspicious lump/discharge	Referred to Surgeon at CHC/DH/GH for confirmation
Oral Cancer	Suspicious lesion	Referred to Surgeon/Dentist/ENT specialist/Medical officer at CHC/DH/GH for confirmation and biopsy
Cervical Cancer (screened at PHC)	Suspicious lesion	Referred to Surgeon and Gynecologist at CHC/DH/GH for confirmation

### 1.2.7 Treatment and Follow up

The treatment for hypertension and diabetes can be initiated by the Medical Officer at the PHC, once the individual is diagnosed as being hypertensive and/or a diabetic. Sometimes a visit to the CHC may be necessary to visit a specialist for confirmation. Every patient will have a treatment plan that consists not only of medication but also advise on lifestyle changes. The patient must receive at least a month's supply of drugs from the nearest PHC by the Medical Officer. You or the ASHA will make monthly visits to the patients for ensuring compliance to treatment, checking on diet and life style modification, and measuring the blood pressure/ blood glucose monthly to assess if the patient is responding to the treatment. The records must be updated regularly in their individual health card.

Once the patient's condition is stable, a three-month drug supply could be stocked with the ANM at Sub Centre, to be given each month only after consultation with the Medical officer at the nearest PHC. You will be oriented to the use of standard treatment and guidelines for diagnosis and treatment of common NCDs in subsequent chapters.

Those individuals who are already on another form of treatment or taking treatment from a private practitioner should be motivated to visit the government health system. Under the NHM the Free Drugs and the Free Diagnosis services schemes are operational across the country. This means that patients are assured of free diagnosis and treatment. This is an important point, since treatment for NCDs is life-long and tests are costly. Patients often tend to stop treatment or switch to other forms of treatment which are not effective. This may cause a deterioration in their condition and lead to complications, which require even more costly care.

For those individuals in whom you identify a suspicious lesion in the oral cavity they should be referred to a dentist. In some states dentists are available at the PHC. Otherwise the patient will need to go to a CHC. For suspicious lesions in the breast or cervix these patients should directly be referred to the CHC for examination by a specialist: who could be a surgeon or a Gynecologist.

#### 1.2.8. Record Keeping and Reporting

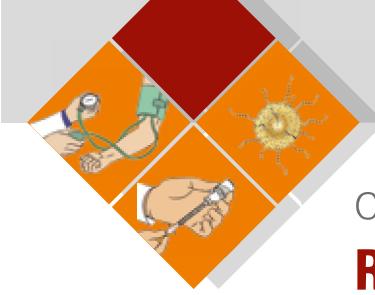


At the sub-centre, you will maintain the prescribed reporting format data of all persons above 30 years of age- This format is a part of the NPCDCS reporting formats (Annexure- 3). You will also need to be familiar with the treatment plans of those individuals with any of these conditions to enable you to follow up. You will also submit your records in the PHC monthly meetings. Staff nurse from the PHC or LHV will support and supervise you through regular visits to your coverage area.

### 1.3. Core Competencies required for ANM

In order to effectively undertake the activities under this programme, you will need the following sets of skills.

- ◆ Effective communication to undertake health promotion activities at different settings (school, workplace and community).
- ◆ Know the signs, symptoms and complications of Hypertension, Diabetes, Cardiovascular and Cerebrovascular diseases and common Cancers.
- ◆ Become familiar with the drugs for these conditions and be able to identify side effects for patient reassurance or referral for care.
- ◆ You should be able to
  - Calculate Body Mass Index (BMI) and assess risk
  - Measure blood pressure
  - Measure blood glucose
  - Screen for breast cancer through Clinical Breast Examination (CBE) and for oral lesions through Oral Visual Examination (OVE)



## Chapter 2

# Risk Factors for Non-Communicable Diseases



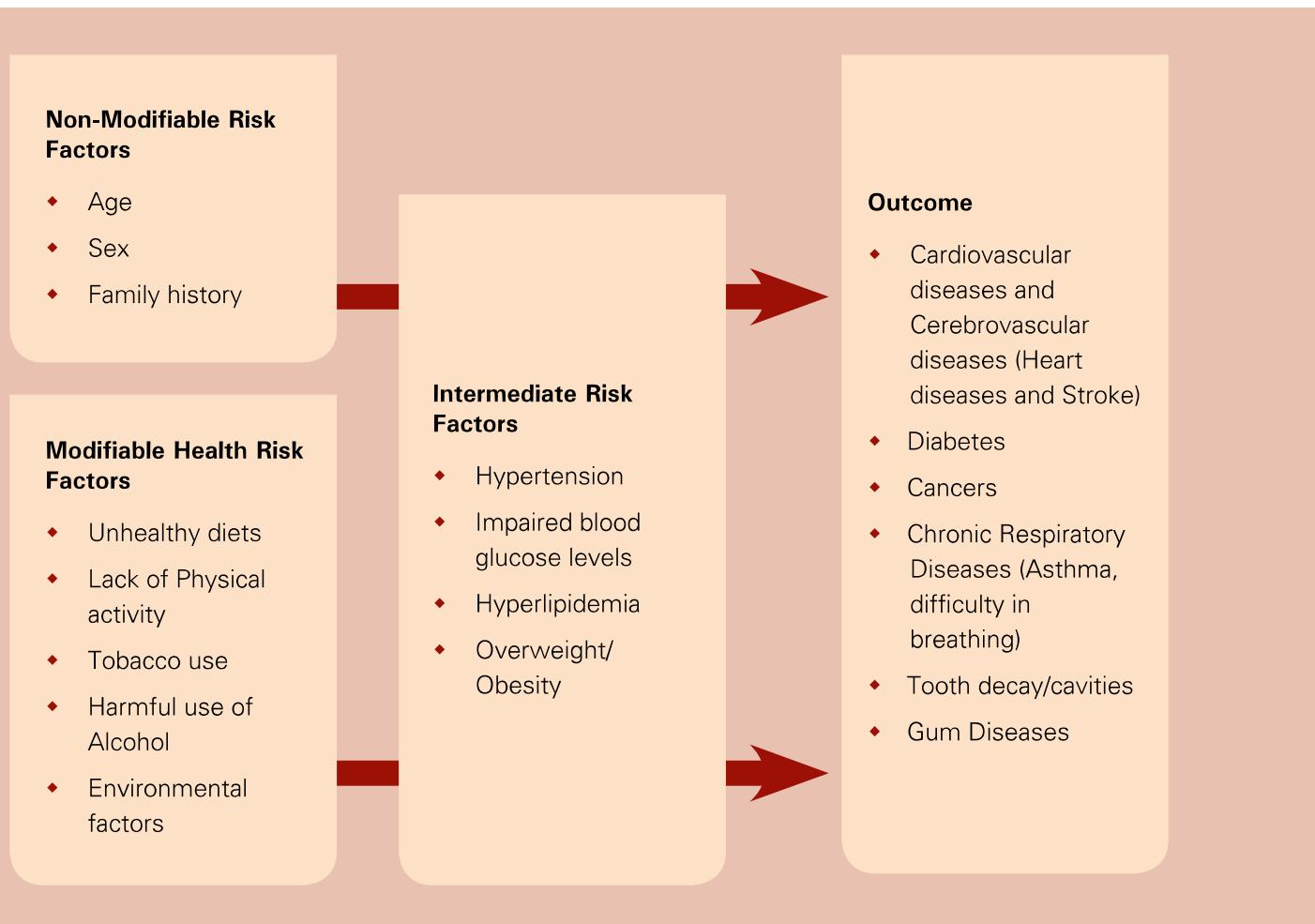
In this Chapter, you will learn about:

- ◆ Risk factors for Non-Communicable Diseases
- ◆ Reasons for increase in Non-Communicable Diseases
- ◆ Ways in which the poor, women and elderly are vulnerable to NCDs

## What are Risk Factors?

A risk factor is a condition or behaviour that increases the chances of developing a particular disease, injury, or other health condition.

The figure<sup>6</sup> below shows how risk factors can lead to Non-communicable diseases. The more risk factors one has, the greater is the chance of getting a particular disease.



<sup>6</sup> Adapted from WHO STEP wise approach to NCD surveillance, WHO-2003

### i. Non-Modifiable risk factors

These risk factors are inherent to an individual and cannot be changed, such as age, sex and family history.

- ◆ **Age**-With increasing age, our body undergoes changes. As we grow older, there is an increase in the risk of developing hypertension (high blood pressure), high blood sugar levels, high levels of body and blood fats. These conditions can lead to Non-Communicable Diseases like- heart and blood vessel diseases (stroke), diabetes, cancer, respiratory problems, etc.
- ◆ **Sex**- Both women and men are at risk of developing Non-Communicable Diseases. Men are at a higher risk of developing Non-Communicable Diseases. However, women who have reached menopause are more likely to suffer from heart attacks than pre-menopausal women. Some risk factors for developing Non-Communicable Diseases such as high blood pressure or high blood glucose can affect women even during pregnancy.
- ◆ **Family history**- If a person has a family history of NCDs (if a close family member- parents, siblings also have the disease) she/he has a high chance of getting the disease.

### ii. Modifiable risk factors

These are risk factors that can be changed by specific action. The harmful effect can be reduced with changes in lifestyle and treatment. These risk factors include-

- ◆ Unhealthy diets (high fat, sugar and salt content; and low fruit and vegetable and fibre intake)
- ◆ Physical inactivity
- ◆ Tobacco use
- ◆ Harmful use of Alcohol

Population level risk factors include poverty, poor living and working conditions and environmental factors like pollution from factory smoke, cars and even cooking stove (chulha) in home, etc. can increase the risk of many NCDs.

At the individual level, some modifiable risk factors can be changed if the person changes her/his individual behaviours. However, some factors also require changes at the level of laws and government action. For e.g. government should provide smokeless chulhas (stove) to reduce indoor pollutions or reduce air pollution by imposing fine on industries setup in residential areas. Also, there is a law against selling of tobacco products near schools and colleges so that children do not start smoking early.

In the box given below, you will understand the level of risk factors in the community

#### **NCD risk factor survey at community level: STEPS Survey, Punjab**

To assess the burden of risk factors of NCDs, a survey was conducted in Punjab during 2014–15. Physical measurements and blood and urine sampling was also undertaken. The major findings were as follows:

- ◆ Tobacco consumption was reported by 20% men and 0.9% women
- ◆ Alcohol consumption was reported by 27% men and 0.3% women
- ◆ Low levels of physical activity were recorded among 31%
- ◆ Overweight and obesity was 28.6% and 12.8% respectively
- ◆ Hypertension was 40.1% and mean sodium intake in grams per day for the population was 7.4 gms.
- ◆ In addition, 7% of the population aged 40–69 years had a cardiovascular risk of 30%

### **iii. Intermediate risk factors**

The non-modifiable and modifiable risk factors (lifestyle related) result in ‘intermediate risk factors’ or ‘biological’ risk factors. These are:

- ◆ Hypertension (high blood pressure)
- ◆ Impaired blood glucose levels High levels of harmful blood fats - Hyperlipidemia
- ◆ Overweight/Obesity (excess amount of body fat)

### **Are Non-Communicable Diseases increasing? If so, then why?**

Over the past few years, we are noticing an increase in deaths and illnesses due to Non-Communicable Diseases. Some of the reasons are:

- ◆ People shifting from rural areas to urban areas and making changes in lifestyles related to diet, exercise and other behaviours.
- ◆ Increase life expectancy of people and thus more people living at an increasing age.
- ◆ Decrease in physical activity due to availability of motor vehicles for transport.
- ◆ Lack of adequate, safe spaces for regular exercise.
- ◆ Availability and use of tobacco and alcohol for all age groups.
- ◆ Increased use of foods high in fats, salt, sugar and sugar sweetened beverages.
- ◆ Low consumption of fruits and vegetables because of high costs/lower availability.
- ◆ Increased consumption of refined and packaged foods.
- ◆ Growing environmental pollution (air, food, water).

## Do Non-Communicable Diseases affect only rich people?

A common perception is that Non-Communicable Diseases are a disease of the rich. However, this understanding is not correct. Poor and vulnerable people can suffer from NCDs too. Two important factors that can cause NCDs are poverty and malnutrition.



As you know, many children are born with low birth weight (weighing less than 2.5 kg at birth). The lack of nutrition for the baby while in the womb, has consequences in adulthood. While growing up, the bodies of such low birth weight babies are not able to adapt to fatty or sugary foods. This results in an increase in risk factors like hypertension, high blood fat levels, and high blood glucose levels.

Poverty contributes to NCDs in several ways, including maternal malnutrition. Also, poor people are not able to buy and consume healthy foods such as nuts, fresh fruits, etc. As a result, they often can only afford to eat rice or roti, with no pulses or vegetables. Also,

particularly in the case of urban poor, long working hours do not leave them enough time to cook healthy meals, such as the use of leafy green vegetables or healthy grains that take longer to cook. The poor also live in places where there are higher risks of air pollution, such as near factories which release harmful chemicals. So, you can see that the risks of NCDs can be higher among the poor, when compared to the rich, who may have more time and money to invest in healthier lifestyles.

Non-Communicable Diseases are also associated with higher health care costs due to long and expensive treatment. With NCDs, you cannot stop taking medicines once you feel better – you have to keep taking them to keep illness away, often for a lifetime. But many people stop taking medicines once they feel better or when they run out of money. These illnesses also require close monitoring and regular follow up by a health service provider. The poor may not be able to visit a health centre regularly as that would mean loss of wages. High transportation costs to and from the health facility, lower energy to do work, lack of money to make healthy food choices and stress, are added factors leading to higher levels of Non-Communicable Diseases among the poor.

Treatment for Non-Communicable diseases is generally spread over a long period of time. In case of complications, people may need hospitalization. This can lead to financial hardship. Such illnesses of even one family member could affect the family's income. This may result in the children dropping out of school, or even affect the consumption of nutritious food for the rest of the family.

## **Non-Communicable Diseases and Women**

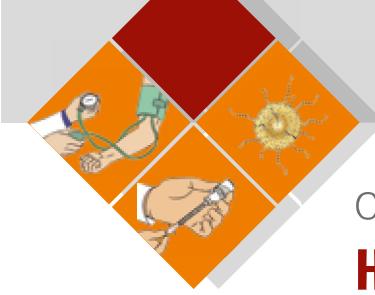
Women are particularly disadvantaged as they are often more vulnerable because of their status within the family and society. Poverty is a factor that increases this vulnerability. In comparison to men, they lack access to healthcare, have little control over the household income and are unable to make decisions for themselves regarding care and treatment. Also, as a tradition in many households, women eat leftovers which may not constitute a healthy dietary choice. Therefore, it is important to increase women's awareness about Non-Communicable Diseases and ensure that they participate in screening and treatment programmes.



## **Non-Communicable Diseases among the Elderly**

Older adults both men and women, above the age of 60 years, are at a higher risk of developing NCDs. Ageing causes changes in body metabolism which may lead to NCDs. Thus it is important to ensure that older people are also encouraged to take part in screening and treatment programmes.





## Chapter 3

# Health Promotion



In this Chapter, you will learn about:

- ◆ Importance of Health Promotion
- ◆ Approaches to Health Promotion
- ◆ Health Promotion specifically related to:
  1. Healthy Diet
  2. Overweight/Obesity
  3. Physical Activity
  4. Tobacco
  5. Alcohol
  6. Stress
- ◆ Health Promotion in specific situations: Workplace, Schools and Communities

## 3.1. What is Health Promotion?

Health promotion is the process of enabling people to increase control over, and to improve, their health.

### Importance of Health Promotion

- ◆ Health promotion empowers individuals, families and communities to engage in healthy behaviours and make positive changes in the living and working conditions that affect their health.
- ◆ Health promotion motivates people to make behavioural and lifestyle changes that reduce the risk of developing chronic diseases, and other morbidities, thus reducing premature deaths.
- ◆ Among those with diseases, health promotion motivates behavioural change to prevent disease complications.
- ◆ By focusing on prevention, health promotion reduces the healthcare costs that individuals and communities would spend on medical treatment.

Health Promotion has a lifelong effect. The earlier health promotion begins, the better its effects are. The earlier an individual begins a healthy lifestyle, the easier it will be to maintain good habits upon reaching adulthood and throughout one's life. Health promotion is thus about making lifestyle changes by adopting healthy habits, and ensuring positive social, environmental and occupational conditions.

## 3.2. Approaches to health promotion

Various approaches can be used such as camps, inter-personal communication (IPC), posters, banners etc. to educate people in the community/school/workplace settings. Camps may be organized on Village Health and Nutrition Days/Urban Health and Nutrition Days when you, the ANM visit the village/urban slums for providing health services to the community. During the camp, you will discuss the importance of health promotion and motivate them to adopt a healthy lifestyle. Communication approach may be used to raise awareness about healthy behaviours for the community. Examples of communication strategies include public service announcements, banners, posters, health fairs/melas, mass media campaigns, inter-personal communication (IPC), etc.



### 3.2.1 Health Promotion using the 'T A L K' approach

**T – TELL** About healthy life style

**A – ADVISE** Individuals and families on what to do to reduce risk factors and support them to reduce risks and adopt healthy lifestyles

**L – LEAD** Collective community action for reducing risk factors by working with community based organizations, Village Health Sanitation and Nutrition Committees/Mahila Arogya Samities/Self-help groups

**K – KNOW** more about health promotion and healthy life style, self-help approaches to reduce risk and community resources for treatment and support

**TALK** is a simple approach to remember what you can do for health promotion.

## 3.3. Health Promotion Messages for Healthy Lifestyles

A healthy lifestyle is one which helps to improve people's health and well being. It improves critical health indicators such as weight, blood sugar, blood pressure, and blood cholesterol. Enabling behavioural and life style changes through health promotion is an important component of the programme at sub-centre level and would be carried out by the front-line health workers- such as ASHA, you as the ANM/MPW. In this section, we discuss issues related to health promotion in six major areas. These include healthy diet, physical activity, addressing overweight/obesity, promoting tobacco cessation, avoiding the harmful use of alcohol, and managing stress.

### 3.3.1. Healthy Diet

#### Food Pyramid<sup>6</sup>

The Food Pyramid is a guide to be used by the healthy population for the amount and types of foods to be included in the daily diet in order to stay healthy. The base of the pyramid is made up of foods that should be the bulk of a healthy diet. In contrast, foods one should eat in smaller amounts or less frequently are shown in the smaller sections of the pyramid. Cereals, millets and pulses should be taken adequately; fruits and vegetables liberally; animal foods moderately and oils and sugars in very small amounts.



<sup>7</sup> Source: Dietary Guidelines for Indians, A Manual, National Institute of Nutrition, ICMR, 2010

## What are the basic food groups?

Foods have been grouped as follows based on the nourishment they provide to the body. These are:

1. Cereals, Millets and Pulses
2. Vegetables and Fruits
3. Milk and Animal Products
4. Oils, Fats, Sugars and Nuts

The quantity of foods needed to meet body requirements differ with age, sex, body composition and physical activity. Thus those who engage in heavy work need to eat more, but those who do not do much activity need lower quantities.

Many traditional foods that are fibre-rich like whole products- wheat (atta products), jowar, bajra, maize, unhusked dals (with chilka), fruits and vegetables constitute a Healthy Diet. Eating such foods also helps to maintain a healthy body weight and reduces the risk of Non-Communicable Diseases. Some Non-Communicable Diseases require food restrictions. People suffering from Non-Communicable Diseases require specific dietary advise.

**Table 3: Classification of Food Groups with examples**

Food Group	Examples*
<b>Cereals, Millets and Pulses</b>  	Cereals - Wheat, wheat flour ( <i>atta/maida</i> ), rice (brown/white), rice flakes ( <i>chirwa</i> ), maize/corn, barley, oats, semolina ( <i>suji</i> ), vermicelli ( <i>sevian</i> ), puffed rice ( <i>murmura</i> ), etc.;  Millets - <i>Bajra, Ragi, Jowar</i> ;  Pulses/dals and legumes- Bengal gram ( <i>channa dal</i> ), bengal gram flour ( <i>besan</i> ), green gram (moong dal), black gram (urad dal), red gram ( <i>Arhar dal/tur dal</i> ), chickpea (white/black/green chana), sprouted pulses, legumes like rajma, lobia, soyabean and its products, etc.
<b>Vegetables and Fruits</b>  	Green leafy vegetables- spinach, mustard leaves ( <i>sarson</i> ), fenugreek leaves ( <i>methi</i> ), bathua, coriander leaves, etc;  Other vegetables- carrots, onion, brinjal, ladies finger, cucumber, cauliflower, tomato, capsicum, cabbage, etc;  **Starchy roots and tubers - potatoes, sweet potatoes, yam, colocasia and other root vegetables;  Fruits- Mango, guava, papaya, orange, sweet lime, watermelon, lemon, grapes, amla, etc.

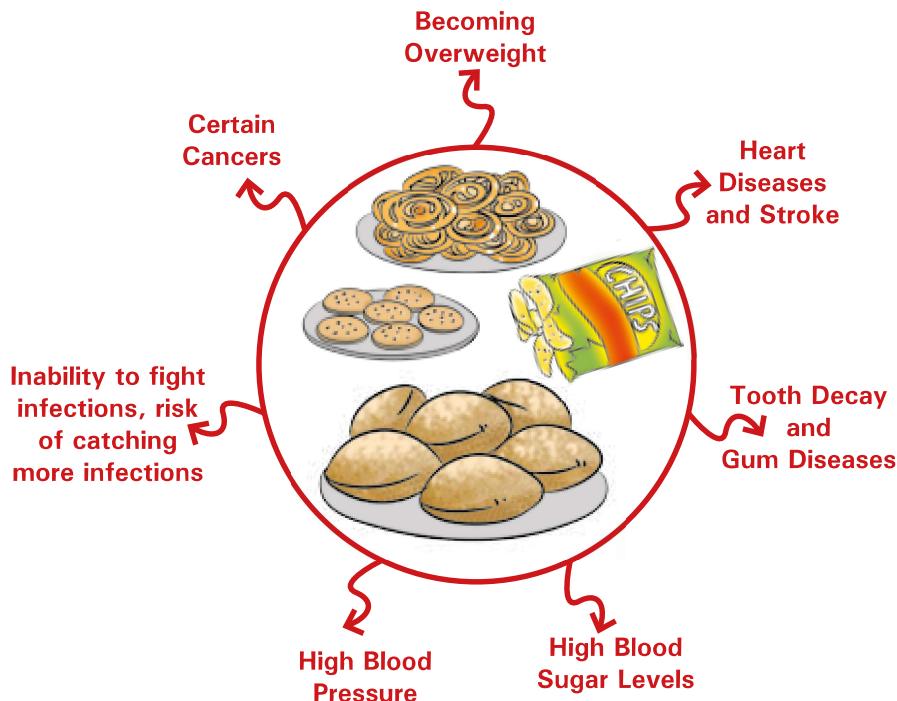
<b>Milk and Animal Products</b>	Milk and milk products- Milk, curd, skimmed milk, cheese, cottage cheese (paneer), etc.; Animal products- Meat, egg, fish, chicken, liver, etc.
<b>Oils, Fats, Sugars and Nuts</b>	Oils and Fats- Butter, ghee, vegetable cooking oils like groundnut oil, mustard oil, coconut oil, etc; Sugars-Sugar, jaggery, honey; Nuts- peanuts, almonds, cashew nuts, pistachios, walnuts, etc.

\* These examples will change according to local crops and diets in different areas

\*\* Starchy roots and tubers like potatoes, sweet potatoes (*shakarkandi*), yam (*jimikand*), colocasia (*arbi*) and other root vegetables; as well as fruits like banana are rich in starch which provide energy.

Changes in lifestyle of people due to improved economic growth and status has led to dietary changes. People have shifted from consuming traditional and fibre-rich foods, fruits and vegetables towards eating more processed foods like- white rice, *maida*, husked dals (without outer covering), foods of animal origin, foods available in packaged forms which are ready-to-eat and cook, etc. A diet rich in sugar, salt, fat, foods such as red meat-mutton, liver; milk and milk products such as full cream milk, butter, ghee, but low in the amount of fruits and vegetables is called an Unhealthy Diet.

### Effects of an Unhealthy Diet



## **Helping people make healthy food choices**

The following points will help you explain healthy food choices to your community

- ◆ All meals to be taken at regular intervals
- ◆ Wash food items properly before cooking
- ◆ Boiling, steaming, roasting, cooking with minimal oil, as methods of cooking should be used rather than deep frying or using excess amount of oil.
- ◆ Include foods from each of the four basic food groups shown in the Table-3
- ◆ Consume a variety of fresh, colourful, seasonal and locally available fruits and vegetables (including green leafy vegetables)
- ◆ Eat whole fruits as they are rich in fibre or roughage. Fibre/roughage helps in slowing down the absorption of sugar and fats into the blood
- ◆ Eat whole cereals and pulses (with outer covering) as they are high in fibre or roughage rather than eating refined cereals and pulses (without outer covering)
- ◆ Restrict eating processed foods or foods available in packets- these have high amount of fat/oil, salt and sugar.
- ◆ Reduce the consumption of sugar rich foods. Those with family history of diabetes should be careful of the amount and type of food consumed.
- ◆ Limit the intake of preserved, processed and packaged foods which are salt-rich. Examples are: papads, pickles, salted namkeens/savouries, salted biscuits, salted butter/yellow butter, chips, chutneys, sauces and ketchups, etc.
- ◆ Adding extra salt to cooked food and salads should be avoided. Those with family history of high blood pressure should especially reduce their daily salt consumption. Reduce the amount of salt- not more than 1 teaspoon (5 gms) of salt for each individual in the whole day.
- ◆ Restrict intake of red meat like mutton, liver, brain, etc. and consume lean meats like chicken, fish, etc.
- ◆ Use vegetables oils like mustard oil, groundnut oil, soyabean oil, etc. for cooking. In practice, it is best to use a mixture of oils.
- ◆ Ghee, butter, coconut oil are harmful and should be used in small quantities
- ◆ Reduce the consumption of deep fried foods-samosa, vadas, kachori, pakoras, etc.
- ◆ Roadside vendors who sell fried foods, heat the same oil over and over again. Vanaspati is also used by vendors and to make savouries, biscuits, mithai, mathris, and deep fried foods. Use of Vanaspati should be avoided as it can lead to blocking/clogging of blood vessels and possibly to a heart attack and other Non-Communicable Diseases.
- ◆ Maintain healthy weight; people who are overweight need to lose weight
- ◆ Drink plenty of water, at least 8-10 glasses of water daily.

- ◆ Beverages like buttermilk, lassi, coconut water, lemon water, etc. should be consumed instead of bottled soft drinks and fruit juices which are high in sugar.

### **Poverty as an underlying cause for unhealthy food choices**

- ◆ Most information that is available through advertisements and newspapers, highlight that unhealthy foods (foods particularly rich in fats, sugars and salt) are the reasons for causing NCDs. They also urge people to eat more fruits, nuts and vegetables, eat more often, and use healthy oils in their cooking. These messages assume that such healthy foods are easily available to everyone, and that people have the time and money to purchase and prepare healthy foods.
- ◆ However, poor people are unable to afford such dietary items on a regular basis. Poor people tend to eat larger quantities of foods that are cheap but do not have much nutritional value. For instance, you will find people eating five or six chapattis, but with hardly any vegetables or only watery dal. Among rice eating communities, poor people cannot afford pulses and vegetables so they may eat a large quantity of rice, with just a little dal or buttermilk. Also, in rural areas, poor people may farm on plots of borrowed land. Even though they cultivate healthy grains/pulses or fruits and vegetables the major share of the harvest is taken away by the landowners. Over the past few decades several environmental factors, changes in farming practices (farmers are no longer cultivating traditional grains and have shifted to wheat/rice cultivation) and food marketing strategies have affected the quality of diets. It has also resulted in decreased consumption of locally and regionally available foods which are nutritionally adequate (rich in all vital nutrients). All these changes have a higher adverse effect on the poor.

#### **3.3.2. Overweight and Obesity**

In this section, you will learn about:

- ◆ Causes of becoming overweight/obese
- ◆ Risks associated with being overweight/obese
- ◆ Diagnosing Overweight/Obesity in individuals
- ◆ Measurement of Body Mass Index (BMI) and Waist Circumference (WC)
- ◆ Benefits of reducing weight

India is in the process of transition, where under nutrition and over nutrition co-exist. You have read in the earlier chapters that we are seeing changes in life style such as eating habits, increasing consumption of tobacco, alcohol and reduced physical activity. This has affected the nutritional status leading to individuals becoming overweight/obese. However, we still continue to see under nutrition not just among children but among adult women and men as well in many parts of the country. In your own area, you will see that there are both undernourished individuals and people who are overweight/obese.



The common perception is that Non-Communicable Diseases occur only in overweight or obese individuals. However, undernourished women are more likely to have low birth weight babies, who are at increased risk of developing Non-Communicable Diseases when they grow into adults.

## **Causes of becoming Overweight/Obese**

If the weight of an individual goes above a certain level, the person is referred to as being overweight/obese. This is defined as having too much body fat in the body, which can lead to health problems.

The main causes of becoming overweight/obese are:

- ◆ Family history (or having a tendency of becoming overweight/obese)
- ◆ Eating an unhealthy diet
- ◆ Lack of physical activity/low physical activity
- ◆ Presence of psychological factors- Depression, anxiety, stress, and low esteem can result in over eating
- ◆ Hormonal imbalance in the body
- ◆ Over-feeding during infancy, childhood and adolescence predisposes to overweight/obesity during adulthood

## **Risks Associated with being Overweight/Obese**

Being overweight/obese can result in health problems, such as:

- ◆ Cardiovascular diseases (heart diseases) and cerebrovascular diseases (stroke)
- ◆ High levels of harmful blood fat/ Hyperlipidemia
- ◆ Hypertension
- ◆ Diabetes
- ◆ Musculoskeletal disorders (especially osteoarthritis – a disabling, degenerative disease of the joints)
- ◆ Sleep Disorder
- ◆ Cancer –cancer of breast, cervix, ovary, liver, gallbladder, kidney, colon, rectum and prostate
- ◆ Diseases of the joints
- ◆ Lung Disorders
- ◆ Formation of gallstones

## **Diagnosing Overweight/Obesity in individuals**

In this section, you will learn how to diagnose an overweight/obese individual by calculating Body Mass Index (BMI) and measuring Waist Circumference (WC). Both BMI and WC should be used together (with equal importance) to identify individuals at risk at the community level and in the clinics. The risk for Non-Communicable Diseases increases, with increases in BMI and WC.

### **1. Body Mass Index (BMI)**

This is used as a screening tool for estimating the total body fat content in a person's body. It is calculated by dividing a person's weight in kilograms by his or her height in meters squared ( $\text{kg}/\text{m}^2$ ).

BMI is calculated by measuring:

Weight (kgs)- You already have a weighing scale and have been recording weight of pregnant women in the sub-centre.

Height (meters)- A wall-mounted stadiometer or non-stretchable tape measuring height up to 2 meters can be used.

BMI can be calculated by using the formula:

$$\text{BMI} = \frac{\text{Weight (in kg)}}{\text{Height (in meter}^2)}$$

By using this method, underweight, normal, overweight and obese individuals can be identified. Based on observational studies it has been suggested that the normal BMI values in Asian Indian adults to be between  $18 - 22.9 \text{ kg/m}^2$ .

**Table 4: Classification of Overweight/Obesity by Body Mass Index in Asian Indians<sup>8</sup>**

Weight Status	BMI Range/Cut-off
Underweight	Less than $18.0 \text{ kg/m}^2$
Normal	$18.0-22.9 \text{ kg/m}^2$
Overweight	$23.0-24.9 \text{ kg/m}^2$
Obesity	More than or equal to $25 \text{ kg/m}^2$

#### Metric Conversions- Conversions for height into meters

- ◆ 1cm = 0.01 m
- ◆ 1foot = 0.30 m
- ◆ 1inch = 0.02 m

Example- Sachin, is a 45-year-old man, weighs 65 kgs with height 5 feet 10 inches.

**Step 1-** Convert the height in meters. Using the metric conversion, convert the height given in feet and inches to meters.

So, as given in example, convert feet into meters- 5 feet=  $5 \times 0.30 = 1.5 \text{ meters}$  (**1 foot=0.30m**) and convert the height given in inches into meters- 10 inches=  $10 \times 0.02 = 0.2 \text{ meters}$  (**1 inch= 0.02m**). Add the height obtained after conversion (feet and inches into meters) =  $1.5 + 0.2 = 1.7 \text{ meters}$ .

**Step 2-**Multiply the answer obtained from step 1 (the meters)

Height in Meter X Height in Meter =  $1.7 \text{ m} \times 1.7 \text{ m} = 2.89 \text{ meters}^2 (\text{m}^2)$

**Step 3-** Using the BMI formula

BMI = Weight in Kilogram / (Height in Meter x Height in Meter)

BMI=  $65 \text{ (kgs)} / 2.89 \text{ (m}^2) = 22.49 \text{ kg/m}^2$

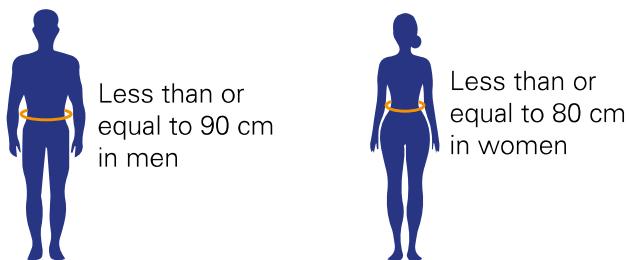
Sachin's BMI is **22.49 kg/m<sup>2</sup>**, who is **NORMAL** according to the BMI cut-offs.

<sup>8</sup> Source: Consensus Group. Consensus Statement for Diagnosis of Obesity, abdominal Obesity and the Metabolic Syndrome for Asian Indians and Recommendations for Physical Activity, Medical and Surgical Management-Misra et al, 2009.

## 2. Waist Circumference (WC)

Two individuals may have the same BMI, but may differ in the amount of fat around the waist. People who develop excess body fat especially around the waist are more likely to develop Non-Communicable Diseases even if they have no other risk factors. It is best measured by taking waist circumference in centimeters (cms). It should be less than or equal to 90 cm in men and less than or equal to 80 cm for women (See below Figure).

### Classification of Overweight/Obesity by Waist Circumference



The steps to measure Waist Circumference is given in Annexure- 4.

### Benefits of reducing weight

- ◆ The reduction of weight lowers the risk of-
- ◆ Cardiovascular diseases (Heart diseases) and Cerebrovascular diseases(stroke)
- ◆ Type-2 diabetes
- ◆ Amount of Harmful blood fats/Hyperlipidaemia
- ◆ Hypertension
- ◆ Sleeping disorders

### The role of ANM in helping an individual reduce weight (The following steps can be undertaken with support of ASHA)

- ◆ Help her/him identify and overcome the challenges faced in reducing weight
- ◆ Encourage the family members and friends to provide support and motivation to the overweight/obese individual
- ◆ Motivate the individual who is overweight/obese to make a firm decision to lose weight and change lifestyle to become healthier
- ◆ Life-style management-Eating a healthy diet, and being physically active
- ◆ Explain that they should not resort to misleading measures that promise weight loss in a short term; pills, *churan*, mixtures, surgeries etc.
- ◆ Regular follow-up with the individual is required to monitor changes in their weight or any related health conditions



### 3.3.3. Physical Activity

Physical activity is any body movement that involves the use of muscles of the body, and requires energy. Regular physical activity helps in maintaining a healthy body weight, healthy bones, muscles and joints and protects against the development of heart diseases, stroke, hypertension, diabetes, joint problems and some cancers. Examples: Walking, running, jogging, cycling, playing a sport, dancing, swimming, climbing the stairs, yoga, work like farming, lifting and moving heavy objects as in construction, household work like sweeping, cleaning, washing, dusting, etc.



#### How Much Physical Activity is needed for an adult?

Adults should undertake at least 150 minutes of moderate exercise per week. This can be spread throughout the week e.g. 30 minutes of activity 5 times per week. 10 minutes of moderate activity can be done three times a day, that will add up to the 30 minutes of physical activity per day. Examples of exercises are brisk walking (walking fast), climbing stairs, jogging, cycling, dancing, playing sports and games, yoga, carrying /moving moderate loads (<20kg), etc.



Exercise should increase the heart rate. Household activities like sweeping, cleaning, washing, dusting, etc. do contribute to physical activity. However, doing only such household work alone may not meet the daily requirements. Advise on physical activity should be given according to the occupation and life style of individuals. For example, those who spend long hours in strenuous physical work such as working in the fields or as labourers, or carrying heavy loads may not need to engage in further physical activity.

**Please Note-** People suffering from heart problem, person with disabilities, pregnant women, or lactating women, and people suffering from other health issues may need to do different amount and types of exercises to suit their condition. They will need advice from a medical practitioner.

#### Enabling adequate and regular physical activity in your community

Given below are some ideas that can be given to people who do not engage in regular physical activity:

- ◆ Choose an activity that fits into daily routine. Include exercise into routine work along with developing a habit of walking e.g. to school, market, friend's house, workplace etc. exercise at home, at work or during leisure/relaxing time.
- ◆ Exercising in groups improves motivation to exercise
- ◆ 30 minutes of physical activity per day for a minimum of five days a week.
- ◆ Yoga and meditation both have gained much importance in the past years as they promote health by improving control of mind and body for the overall well-being of a person.



- ◆ Reduce sedentary activities that enhance weight gain i.e. sitting for hours while watching TV, or long sitting hours in workplaces, etc.

The goal is to shift the inactive adults or adults with diseases from the category of “no activity” to “some levels” of activity and to ensure the health benefits gained through being physically active, further motivating them to increase the duration and frequency of their physical activity.

### **Forms of Exercise – Yoga and Meditation**

#### **Yoga**

Yoga is a popular form of physical exercise based upon *asanas* (physical postures), breathing techniques and meditation.

#### **Health Benefits of Yoga**

- ◆ Improves balance and flexibility
- ◆ Increases muscular strength and blood circulation
- ◆ Improves breathing
- ◆ Reduces lower back pain
- ◆ In addition to taking regular medicine, yoga can help in the management of diabetes, respiratory/breathing disorders, and other lifestyle related disorders
- ◆ It helps to reduce depression, tiredness, anxiety/nervousness disorders and stress



#### **Meditation**

Meditation which is an important part of yoga, is an act of continuous thought, helping to reduce negative emotions like anger, depression, anxiety, fear and to develop positive emotions.

#### **Health Benefits of Meditation**

- ◆ Keep the mind calm and quiet
- ◆ Increases concentration, memory, clarity of thought and will power
- ◆ Refreshes the whole body and mind giving them proper rest

### **The role of ANM in promoting healthy diet and physical activity. (The following steps can be undertaken with support of ASHA)**

- ◆ Educate community members on the importance of consuming a healthy diet and help them make healthy food choices based on local food availability.
- ◆ Undertake group activities to raise awareness about various food groups that are locally available.
- ◆ Explain the benefits of physical activity and its role in preventing Non-Communicable Diseases.
- ◆ Work with the Village Health Sanitation Nutrition Committee (VHSNC) / Mahila Arogya Samiti (MAS) and Panchayati Raj Institution (PRI) / Urban Local Body (ULB) representatives to advocate with the block/ district administration with the support of other community groups and influential leaders to improve public understanding of the benefits of regular exercise, yoga and meditation and create spaces such as parks and walking areas that are safe and clean.
- ◆ Plan group physical activity programmes such as cycle rallies, yoga sessions, walks, etc.
- ◆ In your group or community meetings identify those with NCDs. Undertake follow up through home visits to counsel them on diet modifications and undertaking regular physical activities.



#### **3.3.4. Tobacco**

- ◆ Tobacco is consumed as various forms in India by adolescents and adults of both sexes. Smoking tobacco is in the form of cigarettes, *bidis*, cigars/*chutta* (a home-based cigar), hukkahs or pipes (*chillum*). Bidi smoking is the most popular form of tobacco smoking in India. Bidis are as harmful as cigarettes.
- ◆ Smokeless tobacco is consumed through chewing (through the mouth), sucking and applying tobacco preparations to the teeth and gums or inhaling. It is chewed (in the form of *gutkha*, *zarda*, *mawa*, *pan masala* (with tobacco) and *pan* (with tobacco) or *khaini*, applied as a paste in the form of *gudakhu*, *gul*, tobacco-containing toothpastes, and inhaled in the form of snuff, - etc.



- ◆ Tobacco use is dangerous and leads to diseases of the heart, lungs, kidney, oral cavity including cancers, respiratory disorders, tuberculosis etc. It may also result in blindness, high blood pressure, diabetes, tooth decay/gum disease, bad breath, etc
- ◆ Tobacco use in pregnancy leads to low birth weight babies and still birth.
- ◆ Tobacco use leads to impotence and low fertility among men
- ◆ Persons exposed to second hand smoke (Smoke from other person's cigarette/*bidi/hukkah/pipes/cigar/chutta*) suffer from increased risk of lung cancer, heart attack, difficulty in breathing, coughing, asthma, ear infection, irritation to the eyes, nose and throat, long-term negative effects on the brain. Children and women are especially exposed to the dangers of second-hand smoke, if they have a family member who smokes.

### **India's Tobacco Cessation Programme**

In 2003, India introduced the Cigarettes and Other Tobacco Products Act (COTPA-2003).

You, as an ANM, can play an important role in enforcing the following tobacco control measures in your area.

According to this Act,

- ◆ Smoking is completely banned in public places like hospitals, public transport (like buses, trains, taxis, etc), schools and colleges, parks, etc but does not include any open spaces
- ◆ All public places should have non-smoking sign ages saying "No Smoking Area-Smoking here is an offence".Tobacco products cannot be sold to persons under the age of 18 years
- ◆ Tobacco cannot be sold in places within 100 -yards from the educational institutions such as schools and colleges
- ◆ Ban on advertisements, promotion and sponsorship of all tobacco products through electronic and print media.
- ◆ Mandatory prominent, legible and pictorial health warnings on all forms of tobacco products.

The National Tobacco Control Programme (NTCP) is a programme launched by Government of India in 2007- 2008 to increase public awareness about the harmful effects of tobacco use, training of healthcare providers on tobacco control, establishing clinics in healthcare facilities to quit tobacco, and to oversee effective implementation of COTPA. You should know about this, so that you can educate community members on this aspect.

- The benefits of giving up tobacco should be explained to the community such as improvement in breathing, reduction in risk of heart attack, or cancer and improved health.

### Tips to quit tobacco

- Motivate people who consume tobacco to quit the habit by explaining the harmful consequences of tobacco.
- Motivate them that quitting is possible and help them decide a **DATE to QUIT**.
- Motivate them to consult the doctor of nearest health facility or a tobacco cessation centre.
- Several withdrawal symptoms may occur when the person quits the habit of tobacco consumption such as headache, nausea/vomiting, irritability, depressed mood, fatigue (tiredness), drowsiness, difficulty in sleeping, desire for tobacco, etc. but these can be reduced by the support and encouragement of family and friends, finding ways of keeping oneself busy, drinking plenty of fluids, regular exercise, sufficient sleep and eating a healthy diet, or even simple things like carrying out deep breathing exercises.

### 3.3.5. Alcohol

- Alcohol is consumed in India in many forms by adolescents and adults of both the sexes.
- There are various forms of alcohol: made from locally grown grains, vegetables and fruits. Eg. *arrack*, *mahwa*, *tari* (*toddy*) etc; distilled alcohol/foreign alcohol like whisky, rum, etc; beer and locally made illegal drinks.
- Although alcohol has been widely used in India for a long time, in recent years the harmful use of alcohol has increased. This means that people are drinking in quantities which have harmful effects on body.
- Alcohol use is associated with diseases of heart, kidney, pancreas, certain cancers-mouth, food pipe, throat, liver and breast, weakens the body's ability to fight diseases, results in stroke, high blood pressure, leads to increase in weight (overweight/obesity), mind disorders including alcohol dependence, suicidal tendencies, problems in behaviours leading to fights, violence, depression, injuries and accidents (resulting in untimely death).
- Drinking during pregnancy leads to complications during delivery and defects in the child
- If a person is on diabetes medication, alcohol consumption increases the risk of low blood sugar (hypoglycaemia).



Alcohol has socio-economic effects also leading to problems in the family, domestic violence, being isolated or shunned by family and friends, can result in loss of livelihood-causing the entire family to suffer by compromising of essential goods/items.

### **Alcohol Control Laws in India**

- ◆ Governments in the states and at the centre have taken certain actions to control and regulate alcohol consumption.
- ◆ The legal drinking age in India and the laws which regulate the sale and consumption of alcohol vary significantly from state to state.
- ◆ Prohibition of alcohol in few states like Gujarat, Bihar, Lakshadweep, Manipur, Mizoram, Nagaland, etc.
- ◆ Observation of “dry days” where consumption is prohibited during certain days of the year.
- ◆ Ban on drinking in public places
- ◆ Prohibition of driving under the influence of alcohol.
- ◆ Ban of advertisements on alcoholic beverages through electronic and print media

### **The role of ANM in addressing tobacco and alcohol as risk factors. The following steps can be undertaken with support of ASHA**

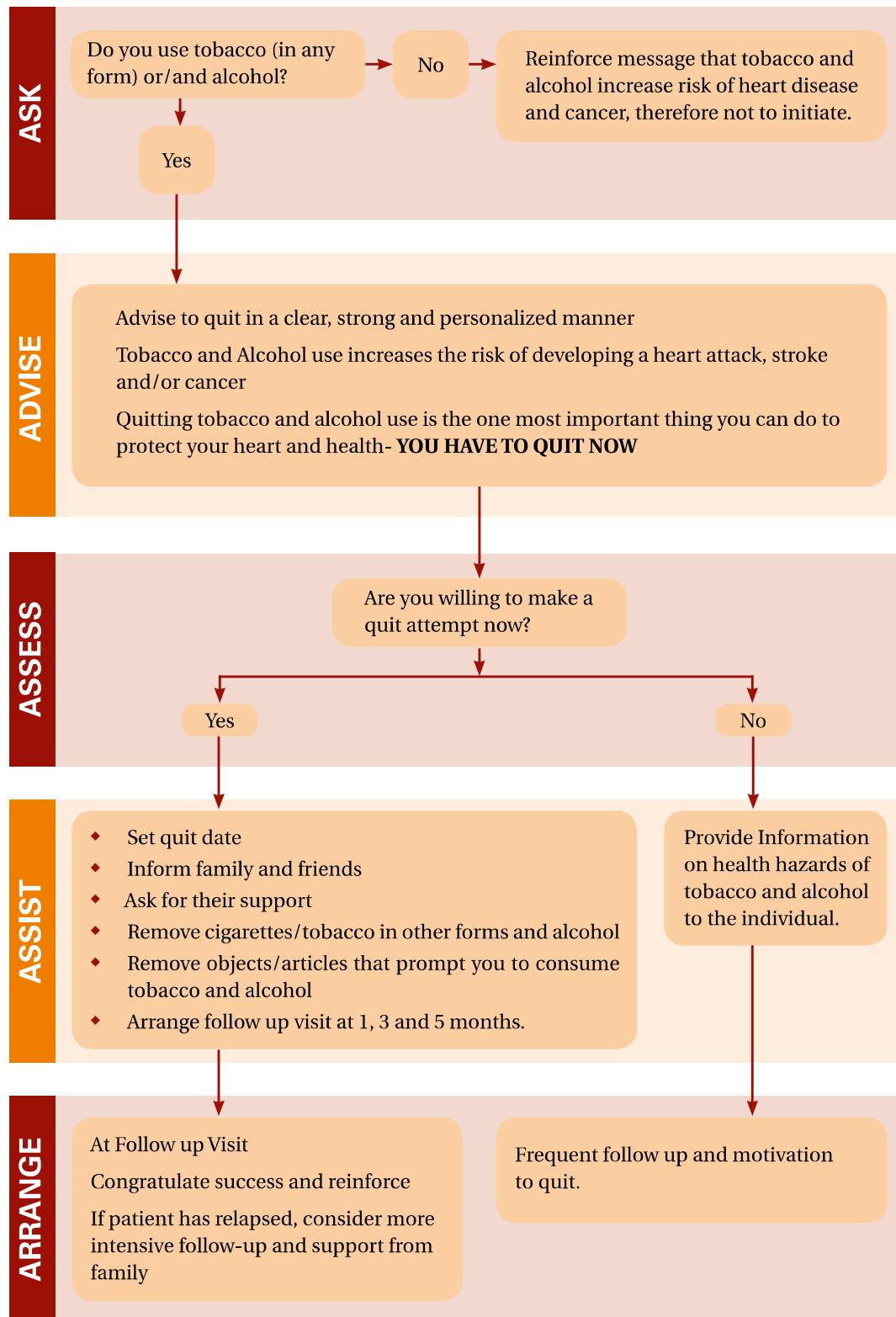
1. Increase community awareness about the harmful effects of tobacco and alcohol to their health and the health of those around them.
2. Improve understanding of the money spent on tobacco and alcohol use and the likely costs of treatment needed if they were to fall ill.
3. Ensure that children and adolescents- both boys and girls are also aware regarding the effects of tobacco and alcohol use. The platform of adolescent meeting and Rashtriya Kishor Swasthya Karyakram (RKS) can be used to disseminate these messages.
4. Work with individuals who use tobacco and alcohol and motivate them to quit these habits by explaining the harmful consequences of tobacco and alcohol use. Take the support of the male multipurpose worker/ASHA facilitator or male volunteers in your community
5. Work with the VHSNC/MAS to undertake community activities to see how many young people use tobacco and alcohol and share this information in community. With the VHSNC/MAS you can organize community action against the availability of tobacco and alcohol- like set-up of shops, illegal supply and production of tobacco and alcohol in the community. This demands building solidarity and support for this cause from various women's groups, ASHAs, Panchayat/ULB members, recognized healthcare providers etc.
6. Identify tobacco cessation centres and de-addiction centres that are in your area and provide information to people about how to access these centres.
7. Mobilize on a priority basis, those who consume tobacco and alcohol to attend screening for Non-Communicable Diseases. Support those with hypertension and diabetes and motivate them to give up these habits.



## Use 5 steps: Ask, Advise, Assess, Assist, Arrange

The following flow chart depicts the protocol for counselling on tobacco and alcohol cessation using the 5 steps -5 A Approach.

Protocol for counselling on cessation of tobacco and alcohol use (5 STEPS– 5A)<sup>9</sup>



<sup>9</sup> Source: Adapted from A Manual for Medical Officers-National Programme for Prevention and Control of Cancer, Diabetes, Cardiovascular Disease and Stroke (NPCDCS), 2008-2009.

### 3.3.6. Stress

Stress is a term that is often used in today's world. Some may use the word 'tension' to describe such a state.

Stress can be caused by family problems, poverty, dissatisfaction with job, unemployment, pressure of work, grief and migration. It can affect the body (physical) or mind (mental) or both. Prolonged stress may affect the overall health of a person and affect her/his family as well. Stress may lead to digestive problems, back or neck pain, sleeping problems, substance abuse, headaches, sleeplessness, depressed mood, anger and irritability. Stress contributes to health problems, such as heart disease, stroke, ulcers, high blood pressure, diabetes, depression, anxiety disorder, and other illnesses. Handling stress depends on an individual's personality.



People handle stress in different ways. Some people can handle stress more effectively than others. For example- when a mother is faced by a situation regarding the sickness of her child. Different women may react to this situation differently. One mother may panic, become frightened, and may delay in seeking healthcare for her child. A second mother may be calm and composed and seek appropriate care by visiting the appropriate service provider. A third mother might be frightened but will still seek medical care for her child's sickness. This example shows that all the mothers are equally concerned about their child's health but they take different approaches to handle stress. The negative effects of stress build up over a period of time. While we cannot totally control stressful situations in life, we can work towards taking simple steps as listed below that can help in maintaining the health and improve the quality of life.

### **The role of ANM in helping people to manage stress. (The following steps can be undertaken with support of ASHA)**

- ◆ Help individuals identify the cause of stress
- ◆ Help such individuals to build supportive relationships- A positive and stable bond between people that can provide emotional and social support is important. Talk to the individual's family members, friends, community members to discuss the problem and reasons for stress
- ◆ Motivate the individuals to exercise regularly- Walking, practicing yoga and meditation, jogging, cycling, etc. can all help improve mood and reduce stress
- ◆ Educate them to make positive changes in behaviour such as eating a healthy diet, control of anger, managing depression, engaging in relaxation activities (activities that an individual enjoys doing), appreciating the positives in oneself and others
- ◆ Help them seek care for health problems from an appropriate service provider.



## **3.4. Health Promotion in specific situations**

Health Promotion can be undertaken at workplaces, in schools, in families and communities because they allow us to reach the target audience without the effort of mobilization.

### **i. Workplace Health Promotion**

Workplace Health Promotion has been defined as "the combined efforts of employers, employees and society to improve the health and well-being of people at work". WHO states that the workplace "has been established as one of the priority settings for health promotion into the 21st century" because it influences "physical, mental, economic and social well-being" and "offers an ideal setting and infrastructure to support the promotion of health of a large audience".

#### **Workplace based intervention for prevention, screening and treatment of NCDs in Tamil Nadu**

Studies conducted among industrial workers in Tamil Nadu revealed high prevalence of risk factors for cardiovascular diseases. The state implemented work place based interventions to create awareness among the workforce on the risk factors to NCDs and its prevention and treatment aspects; to promote healthy lifestyle practices with the aim to prevent emergence or development of risk factors for NCDs; to encourage the employer, employees and their families to go for screening for diabetes, hypertension, cervical and breast cancer in the nearby health facilities.

The activities include sensitization of officials and staff; formation of heart clubs in workplaces; bringing changes in the dietary practices in the eateries and smoke free environment in work establishments; displaying IEC materials on NCDs at workplaces.

Workplace health programmes can:

- ◆ Increase healthy behaviours such as dietary and physical activity changes.
- ◆ Improve employees health knowledge and skills.
- ◆ Help employees get necessary health screening, immunizations, and follow-up care.
- ◆ Reduce employees on-the-job exposure to substances and hazards that can cause diseases and injury.
- ◆ Depending upon the health conditions and behaviours prevalent in workplaces in your area, you can find out which workplace health strategies are most effective.
- ◆ The workplace provides many opportunities for promoting health and preventing disease and injury by providing sessions on- Healthy diet, Physical activity, Tobacco use, Alcohol use, Substance abuse, Coping with stress, Road safety and Personal Hygiene.

## **ii. Health Promotion in School Settings**

Health Promoting Schools (HPS) is an approach where the whole school community works together to address the health and well being of students, staff and their community. Health promotion in schools is crucial as habits are formed in childhood and adolescence.

A Health Promoting School (HPS) is one that strengthens its capacity as a healthy setting for living, learning and working. Health promotion programme spreads over 12 weeks; and 20 weeks health promoting school packages in an academic year have been developed and found feasible in some states.



### **School based intervention for prevention of Non Communicable diseases in Tamil Nadu**

Tamil Nadu Health Systems Project (TNHSP) had initiated activities in coordination with the school education department covering 17,000 schools. The activities include conducting of competition among students on developing communication materials on NCDs with awards at district and State level; displaying communication materials on CVD, diabetes, cancers and ill effects of smoking, organizing exhibitions/ rallies and conducting quiz competitions; forming health clubs promoting health life style practices; encouraging students to communicate on the ill effects of smoking and NCDs to their peer groups and also take messages to their parents on the need to reduce salt consumption and avoid reuse of oil for frying foods. Chapters on NCDs and their prevention have been incorporated in the curriculum of class VI to IX.

### **Health Promoting Schools**

#### **Impact of 20 Week Lifestyle Intervention Package of School children in North India.**

A health promotion Programme was conducted to examine the impact of a lifestyle intervention on behaviour, weight and body mass index (BMI) of children in a school-based setting in Chandigarh. Key interventions were:

- ◆ Fortnightly health education sessions on healthy lifestyle at school in the form of interactive sessions and audio-visual displays
- ◆ Maintenance of lifestyle diaries in which the child's daily diet and physical activity were self-recorded
- ◆ Suitable dietary recommendations to the parents for the diet of their children, prepared in accordance with the guidance of the dietician.
- ◆ Ensuring one period of physical activity at school daily.
- ◆ Motivation to avoid junk food by changing the menu of the school canteen and providing healthier options.
- ◆ Reduction in TV watching hours at home by involving parents
- ◆ Display of health promotion materials such as posters and charts within the schools' vicinity.
- ◆ Active involvement of teachers in health assessment and Parent Teachers' Association.

### **iii. Health Promotion in Families and Communities**

Family is an essential platform to address the foundation for behaviour change and promotion of healthy behaviours. The same messages discussed above should be reinforced during home visits.

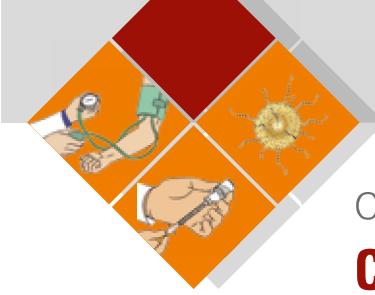
## **Health Promoting District Model**

### **i. Model**

- ◆ A Health Promotion project was implemented for three years (2014-16) in Hoshiarpur and Ambala districts of Northern India, by involving health workers to develop, implement and assess effectiveness of an integrated health promotion model.
- ◆ A Situation analysis revealed poor health promotion efforts.
- ◆ Health promotion manual (Hindi, English and Punjabi) was developed for capacity building of workers.
- ◆ The key features of model included integration and convergence within National Health Programs, multi-tasking, multi-sectoral involvement and community empowerment, using digital media and advocacy tools.

### **ii. Findings**

- ◆ A facility assessment survey revealed improvements in implementation of activities - with an annual activity calendar of IEC/BCC activities, better display of IEC material, improved reporting, monitoring and supervision.
- ◆ At community level the awareness levels of the community members regarding Communicable/ Non-communicable diseases and key Reproductive and Child Health issues improved significantly.
- ◆ Similarly, the client exit survey showed that dissemination of health information by MO/ANM increased in three years from 9.5% to 43.8% and 6.7% to 50% in Hoshiarpur and Ambala districts, respectively.
- ◆ In-depth interview with key stakeholders and group discussion with Village Health and Sanitation Committee/Core Committee (VHSC/MAS) has shown active involvement and improvement of their functioning.



## Chapter 4

# Common Non-Communicable Diseases



In this Chapter, you will learn about:

- ◆ What is Hypertension
- ◆ Consequences of Hypertension
- ◆ Common risk factors leading to Hypertension
- ◆ Screening for Hypertension
- ◆ Criteria for diagnosing Hypertension
- ◆ Management and Control of Hypertension

## 4.1. Hypertension

### What is Hypertension (High Blood Pressure)?

Blood pressure is the force of blood against artery walls/blood vessels as it is pumped through the body. Blood pressure helps blood get to all parts of the body. Hypertension means that the heart has to pump harder than normal for blood to get to all parts of the body. This increases the load on the heart.

Hypertension is also referred to as "*silent killer*". This is because it can exist **without** causing any warning signs or symptoms. That is why it is important to screen all individuals 30 years of age and above for blood pressure at least once annually.

Based on the cause, Hypertension is of two types: Primary/Essential and Secondary Hypertension.

- ◆ **Primary or Essential Hypertension** has no known cause, and usually takes many years to develop. It is a result of lifestyle factors, heredity, environment and the changes in blood vessels that occur with increasing age. However, hypertension can also be seen among younger people.
- ◆ **Secondary Hypertension** is seen when a medicine or a health problem in some other part of the body is causing high blood pressure. This is much less common than Primary hypertension.

**Gestational Hypertension-** Is a hypertension that starts in pregnancy.

## **Consequences of Hypertension**

Hypertension, if not controlled, may lead to life-threatening conditions causing damage to blood vessels, many types of cardiovascular disease such as heart diseases and cerebrovascular diseases like stroke, diabetes, kidney diseases, diseases of eyes, etc. It may also affect the ability to think, remember and learn. Reducing blood pressure by even a small extent can help lower the risk of these conditions.

## **Risk factors for Hypertension**

The following are some common factors that can lead to high blood pressure-

- ◆ Advancing Age- The risk of high blood pressure increases with age
- ◆ Family history
- ◆ Overweight or Obesity
- ◆ Unhealthy diet- A diet especially high in salt, fat, sweets and low in vegetables/fruits, whole grains and whole pulses
- ◆ Lack of physical activity (or sedentary lifestyle)
- ◆ Tobacco use in any form (smoking and chewing tobacco) and second-hand smoke
- ◆ Excessive alcohol consumption
- ◆ Stress
- ◆ Sleep apnea- Breathing is briefly and repeatedly interrupted during sleep
- ◆ Certain chronic conditions such as kidney and hormone problems, diabetes and high levels of harmful blood fats.

Although high blood pressure is most common in adults, children may be at risk, too. For some children, high blood pressure is caused by problems with the kidneys or heart. But for a growing number of children, poor lifestyle habits, such as an unhealthy diet, overweight/obesity and lack of exercise, contribute to hypertension.

## **Screening for Hypertension**

You the ANM, will undertake screening of all adults 30 years of age and above for Hypertension. This will take place on a fixed day at the sub-centre. Regular monitoring of blood pressure helps in making an early diagnosis of hypertension. This is helpful in taking early corrective measures leading to better control of blood pressure levels. For the purposes of screening, any patient with a blood pressure of 140/90 mm Hg and above should be referred to the medical officer for further diagnosis and management.



It is the medical officer's responsibility to develop a treatment plan for the patient, based on the level of blood pressure and the presence of other conditions such as high levels of blood sugar and high levels of fat. The treatment plan includes not just anti-hypertensive medication but also a plan for addressing any modifiable risk factors. It is part of your role

to ensure that the patient adheres to the treatment and makes changes in her/his lifestyle to reduce modifiable risk factors.

### **Criteria for diagnosing Hypertension**

- ◆ The only way to detect high blood pressure is to measure it by a BP apparatus. You are already familiar with the use of blood pressure apparatus such as digital blood pressure instrument and/or aneroid sphygmomanometer present in the sub-centre.
- ◆ As you already know, a blood pressure measurement gives you two readings (numbers). The upper one, which is higher of the two numbers, is called the *systolic blood pressure (SBP)*. The lower number, which is also the smaller of the two numbers, is the *diastolic blood pressure (DBP)*.
- ◆ In a screening programme, individuals with a blood pressure of 140/90 mm Hg and above must be referred to the Medical Officer.

**Table 6: Classification of Blood Pressure in Adults (age  $\geq$  18 years)<sup>10</sup>**

Classification	Systolic Blood Pressure (mmHg)		Diastolic Blood Pressure (mmHg)
Normal	< 120	AND	< 80
Prehypertension	120-139	OR	80-89
Stage 1 HTN	140-159	OR	90-99
Stage 2 HTN	$\geq$ 160	OR	$\geq$ 100

### **Why is it important to check blood pressure even among those without any symptoms?**

Regular screening of blood pressure helps in making an early diagnosis of hypertension. This is helpful in taking early corrective measures leading to better control of blood pressure.

### **The management of Hypertension should include the following-**

1. Non- pharmacological (lifestyle changes) and
2. Pharmacological (medication) therapy, both are required to prevent and manage Hypertension

#### **1. Life-style management (The ASHA will support you in spreading health messages in the community)**

Eating a healthy diet, being physically active, avoiding the use of tobacco in any form/ avoiding exposure to second-hand smoke, reducing the intake of alcohol amongst heavy drinkers, managing stress, reducing weight amongst overweight/obese individuals, etc. are the lifestyle changes. Those with family history of high blood pressure should especially reduce their daily salt consumption to not more than 1 teaspoon (5 gms) of salt for each individual in the whole day, which includes table salt, salt used in cooking, papads, pickles, salted namkeens/savouries, salted biscuits, salted butter/yellow butter, chips, chutneys, sauces and ketchups, etc. The details of these messages have been covered in the chapter on Health Promotion.

<sup>10</sup>Source: Hypertension: The Silent Killer: Joint National Committee (JNC)-VIII Guideline Recommendations, 2015

## 2. Medication for Hypertension

- ◆ The Medical Officer at the Primary Health Centre (PHC) will decide on the medication for the patient. Whether a person requires medicines for his high blood pressure and which medicine is best for the patient would depend on-
  - The blood pressure reading
  - Whether the high blood pressure has already affected target organs in the body such as heart, kidneys, eyes and blood vessels
  - Concurrent medical conditions such as diabetes, heart disease, kidney disease and other risk factors like use of unhealthy dietary habits, lack of physical activity or low physical activity, tobacco, alcohol, overweight/obesity and high levels of harmful blood fats/hyperlipidemia, etc
  - Other considerations will be age, sex (male/female) and body weight

There are several classes of medicines that can be used for the management of hypertension, diabetes and common cancers. Every state has its Essential Drug List (EDL) for common diseases available. The essential drugs for Hypertension, Diabetes and Common Cancers are expected to be available at the PHC, CHC and higher health facilities. This essential drug list is updated on a regular basis and varies state-wise.

Medicines for hypertension are available free of cost to those patients who use government health facilities. The drugs are prescribed by the medical officer and the patient should be given a month's supply of drugs. The patient should be able to collect refills every month from the nearest health facility. This could be a Sub-Centre (SC) or a Primary Health Centre (PHC). The blood pressure reading should be monitored regularly. The frequency depends on the advise of the medical officer.



You with support of the ASHA will be responsible for ensuring:

- ◆ Monthly monitoring of blood pressure
- ◆ Compliance to treatment plan for drugs and encouraging the patients not to stop or change the dose of medicine without medical advise
- ◆ The patient's blood pressure is under control
- ◆ Follow-up: Check-up at the PHC/CHC as advised

The common medicines used for management of Hypertension are:

- ◆ Angiotensin-converting-enzyme inhibitor (ACE inhibitors)
- ◆ Calcium channel blockers
- ◆ Diuretics
- ◆ Beta ( $\beta$ )- Blockers

**Table 7: Dosage of Common anti-hypertensive medications<sup>11</sup>**

Class of Drug	Drug	Initiation dose	Maximum dose
ACE Inhibitors	Enalapril	5 mg once daily (OD)	10 mg twice daily (BD)
	Ramipril	5 mg OD	10 mg OD
	Lisinopril	5mg OD	20mg OD
Calcium Channel Blockers	Amlodipine	5mg OD	10 mg OD
Diuretics	Indapamide	1.5 mg OD	2.5 mg OD
	Chlorthalidone	12.5 mg OD	25 mg OD
Aldosterone antagonist	Aldactone	25 mg OD	100 mg OD
Beta ( $\beta$ )-Blockers	Atenolol	50 mg OD	100 mg OD
	Metoprolol	25 mg BD	50 mg BD

### Treatment Goals

1. Initial aim should be to obtain blood pressure level less than 140/90 mm of Hg
2. Maintain healthy blood pressure throughout the person's life
3. Prevent and control risk factors which could give rise to high blood pressure or complications

## 4.2. Diabetes Mellitus

In this Chapter, you will learn about:

- ◆ What is Diabetes Mellitus/Diabetes?
- ◆ Different types of Diabetes (Type 1, Type 2 and Gestational diabetes).
- ◆ Risk factors for Type 2 diabetes.
- ◆ Common signs and symptoms for Type 2 diabetes.
- ◆ Screening for Diabetes
- ◆ Details about Hypoglycaemia
- ◆ Management and Control of diabetes.

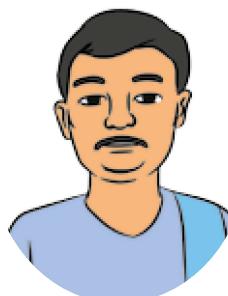
### What is Diabetes Mellitus/Diabetes?

All food that we eat is broken down into a sugar called glucose. Glucose is carried by the blood to all the parts of the body to give energy. The hormone which helps glucose move from the blood into the cells, is called **INSULIN**. Insulin helps to keep the blood sugar levels normal. In diabetes, the body does not produce insulin or cannot use the insulin properly. The glucose builds up in the blood, resulting in high blood glucose levels. Normally, a blood glucose level taken randomly (that is at any time of the day) of over 140 mg/dl should lead to a suspicion of diabetes. This is harmful to many organs of the body.



<sup>11</sup>Module for Medical Officer, Population based screening for Non-Communicable Diseases – 2017 (MoHFW, Government of India).

Diabetes is classified into three types namely Type 1, Type 2 and Gestational Diabetes.

Types of Diabetes	What is it?	Who gets it?
<b>Type 1 Diabetes (T1DM)</b> 	Body does not produce insulin at all. People with this form of diabetes require daily injections of insulin in order to control the levels of glucose in their blood. This may be due to genetics, changes in environmental risk factors and/or viral infections.	The disease can affect people of any age, but onset usually occurs in children, adolescents and younger people. The diagnosis of Type 1 Diabetes can be made throughout childhood but it is more likely below 15 yrs of age.
<b>Type 2 Diabetes (T2DM)</b> 	This is the most common type of diabetes. The body produces some insulin, but not enough or the cells cannot use this insulin very well. People can be treated with oral medication, but may also require insulin injections.	This type of diabetes used to be seen only in adults but it is now also occurring increasingly in children and adolescents. It is strongly associated with ageing populations, family history, excess body weight, unhealthy lifestyle- poor dietary habits, lack/low of physical activity, tobacco and alcohol consumption, etc.
<b>Gestational Diabetes (GDM)</b> 	Diabetes which occurs among women during pregnancy.	Women during pregnancy, and is associated with a risk of complications during pregnancy and delivery. The children of women with Gestational Diabetes are at an increased risk of type 2 diabetes in the future

In this section, we will only discuss about Type 2 Diabetes as it is the most common.

## Risk factors for Type 2 Diabetes

- ◆ Advancing age- It occurs most frequently in adults, but is seen increasingly in adolescents as well
- ◆ Family history of diabetes
- ◆ Being overweight/obese (BMI is  $\geq 23\text{kg}/\text{m}^2$ )
- ◆ Unhealthy eating habits
- ◆ Lack of physical activity
- ◆ Hypertension
- ◆ High levels of harmful blood fats/Hyperlipidemia- Triglyceride and/or cholesterol levels are higher than normal
- ◆ Addictions like tobacco use, drugs and harmful use of alcohol
- ◆ If the woman during pregnancy had diabetes or even mild elevation of blood sugar level during pregnancy
- ◆ Women with polycystic ovarian syndrome
- ◆ Stress and depression

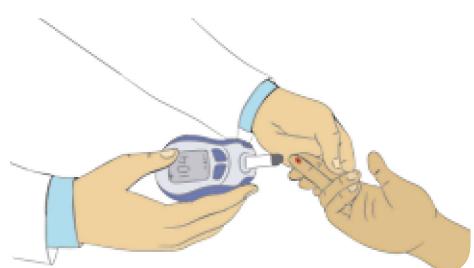
## Common Signs and Symptoms of Type 2 Diabetes

- ◆ Frequent urination
- ◆ Increased hunger
- ◆ Excessive thirst
- ◆ Unexplained weight loss
- ◆ Lack of energy, extreme tiredness
- ◆ Lack of interest and concentration
- ◆ Blurred vision
- ◆ Repeated or severe infections such as vaginal infections
- ◆ Slow healing of wounds, dry or itchy skin
- ◆ Impotence in men



If the blood glucose stays too high and is not treated on time, it can cause damage to the main organs such as-

- ◆ Kidneys – causing kidney failure
- ◆ Heart and blood vessel disease- causing heart attack and stroke
- ◆ Nerves (Neuropathy) – Diabetes can damage blood vessels throughout the body. It causes numbness, tingling in hands and/or feet, making it hard to feel injuries. Diabetes also makes it harder for wounds to heal, easily leading to foot ulcers and infections. Fungus on the feet can also lead to infection. A foot infection can spread to the whole leg if not treated. The leg may become so infected that it needs to be removed (amputated). But good foot care and managing blood sugar levels can prevent complications.



- ◆ Eyes (Retinopathy) - Diabetes can damage blood vessels in the eyes, leading to gradual loss of vision or blindness. If an eye clinic is available, a person with diabetes should have their eyes tested once a year. If vision becomes blurry, keeping sugar levels down may help the eyes recover.
- ◆ Oral cavity – Diabetes worsens gum infections which, in turn, makes diabetes worse. People with diabetes should brush their teeth at least twice a day with a toothbrush or a chewstick (*miswak, neem stick*). A person with diabetes will benefit from seeing a dentist.

All these problems can be prevented if detected early.

## **Screening for Diabetes**

You, the ANM, will undertake screening of all adults 30 years of age and above for diabetes. This will take place on a fixed day at the sub-centre. Regular monitoring of blood sugar helps in making an early diagnosis of diabetes. This is helpful in taking early corrective measures leading to better control of blood sugar levels. You are already familiar with the use of glucometer in the sub-centre. For the purpose of screening, any patient with a random blood sugar over 140 mg/dl should be referred to the medical officer for further diagnosis and management.

It is the medical officer's responsibility to develop a treatment plan for the patient, based on the level of blood glucose and the presence of other conditions such as high levels of blood pressure and high levels of fat. The treatment plan includes not just anti-diabetic medication but also a plan for addressing any modifiable risk factors. It is part of your role to ensure that the patient adheres to the treatment and makes changes in her/his lifestyle to reduce modifiable risk factors.

## **Details of the tests for diagnosing Type 2 Diabetes**

Please remember that the following tests will be done by a laboratory technician at the PHC level and above. Most blood glucose tests actually measure the amount of glucose in the liquid part of your blood called the blood plasma, rather than the amount of glucose in your whole blood. This is called plasma glucose.

### **1. Fasting Blood Glucose (FBG)**

Before taking the blood test, the person should have taken no food for at least 8 hours. They should fast overnight and must not have anything to eat until after the test. The easiest way to do this is to arrange an appointment for the patient to have the blood test first thing in the morning.

### **2. Random Blood Glucose**

Sugar level or blood glucose measured at any time of day without regard to time since the last meal. It does not take into account what the patient has been eating or drinking. It is easier to perform but less sensitive than the other tests.

However, as explained earlier, for the purpose of **screening**, random blood sugar over 140 mg/dl is taken as requiring further follow-up.

### **3. Two- hour venous plasma glucose after ingestion of 75g oral glucose load (Oral Glucose Tolerance Test- OGTT)**

The Oral Glucose Tolerance Test (OGTT) is a method which is used to diagnose Type 2 diabetes by measuring how well the body's cells are able to absorb a fixed amount of sugar or glucose.

### **4. HbA1c (Glycosylated, or Glycated haemoglobin)**

It is a form of haemoglobin in the RBCs. The HbA1c level is proportional to average blood glucose over the previous two to three months. It is an excellent indicator of how well the patient has managed his/her diabetes over the last four weeks to three months. It is recommended for monitoring blood sugar control in diabetic patients. However, the test is costlier than blood glucose measurement.

## **What is Hypoglycemia (Low Blood Glucose)?**

Among those with Diabetes a condition called Hypoglycemia or **low** blood sugar levels can occur. Hypoglycaemia occurs when blood sugar (glucose) level falls below a level of 70 milligrams per decilitre (mg/dl) or less. If not treated, hypoglycaemia can be life-threatening. The only way to know if someone has hypoglycemia is to check blood glucose. Testing blood sugar levels regularly can help understand when sugar levels are dropping too low.

Symptoms are tremours, nervousness or anxiety, sweating, irritability, confusion, rapid/fast heartbeat, dizziness, hunger, nausea, blurred/ impaired vision, headaches, weakness or fatigue, lack of coordination, falls, seizures, unconsciousness and can lead to accidents, injuries, coma and even death.

There are several reasons why this may happen. These are:

- ◆ Missing or skipping a meal
- ◆ Long gap between two meals or delay in eating meals
- ◆ Taking more than recommended dosage of insulin or anti-diabetic drugs
- ◆ Side- effects of some anti-diabetic drugs and
- ◆ Increased physical activity

If someone is having signs of hypoglycemia, it's important to treat it right away.

Hypoglycaemia can be treated by consuming a small amount of sugar-rich foods as soon as symptoms appear. For such an emergency, diabetic patients should be advised to always carry something to eat such as loose sugar, rock candy (*misri*) or toffee, etc.

## **Management of Hypoglycaemia**

If a patient's blood glucose drops below 70 mg/dl, remember the 15/15 rule and treat hypoglycemia, without any delay.



### The 15/15 Rule

1. Check blood glucose level (<70 mg/dl).
2. The patient has to eat or drink **15 grams of carbohydrates (such as sugar-rich foods)**. If blood glucose levels cannot be checked at the moment, the patient should be given 15 grams of carbohydrates to be safe. Give any of the following food items to the patient.
  - ◆ 5 or 6 pieces of toffee
  - ◆ 1 tablespoon of sugar or honey
  - ◆ 2-3 teaspoons (1 teaspoon is 5 grams) of glucose powder as is or diluted in water
  - ◆ 3-4 teaspoons of sugar/powdered sugar
  - ◆  $\frac{1}{2}$  cup fruit juice or normal cold drink
3. Wait 15 minutes. Check the blood sugar once again. If the blood sugar level, is still below 70 mg/dl, again eat one of the food items listed above and check blood glucose sugar after 15 minutes.
4. If blood glucose level is still lower than 70 mg/dl or the patient still has symptoms of hypoglycemia, then the patient should be taken to the PHC for further management.

### Ways to prevent Hypoglycaemia

- ◆ Creating awareness on hypoglycaemia
- ◆ Regular blood sugar testing/monitoring
- ◆ Taking correct dosage of medicines that are prescribed by the Medical Officer or a trained medical doctor
- ◆ Eating small and frequent meals
- ◆ Not skipping or delaying meals
- ◆ Checking blood sugar before exercise
- ◆ Not going empty stomach for morning walk

**Please Note-** People with diabetes should be advised to always carry one of the above food items with them to avoid hypoglycaemia. Sugar packets, rock candy (*misri*) or toffees, etc are easy to carry. People may also wear/carry some form of identification, mentioning they are diabetics. In addition, people in the community should be made aware of the people living with diabetes in their community. This will help in prompt management in case of emergency situations like hypoglycaemia.

### Management of Diabetes

No matter what type of diabetes a person has, glucose control is key to managing the diabetes. Management of Diabetes should be initiated as soon as diagnosis is established even if the patient is asymptomatic. Patient education on diabetes management and life style modifications is the corner stone of effective diabetes control and management and prevention of complications.

The management should include the following:

1. Non-pharmacological (lifestyle changes) and
2. Pharmacological (medication) therapy, both are required to prevent and manage type 2 diabetes

### **1. Life-style management (The ASHA will support you in spreading health messages in the community)**

Change in lifestyle behaviours is effective in preventing or delaying the occurrence of Type 2 diabetes. Eating a healthy diet, being physically active, avoiding the use of tobacco in any form/avoiding exposure to second-hand smoke, reducing the intake of alcohol amongst heavy drinkers, managing stress, reducing weight amongst overweight/obese individuals, etc. are the lifestyle changes. The details of these messages have been covered in detail in the chapter on Health Promotion. Those who have diabetes should regularly take small frequent meals as missing or skipping a meal can lead to low blood sugar level.

### **2. Medication for Type 2 Diabetes**

- ◆ The Medical Officer at the Primary Health Centre (PHC) will decide on the medication for the patient. Whether a person requires medicines for his high level of blood sugar and which medicine is best for the patient would depend on:
  - The blood sugar reading
  - If the target organs in the body such as heart, kidneys, eyes and nerves are affected
  - Presence of co-morbidities or concurrent medical conditions such as high blood pressure (on anti-hypertensive treatment), heart disease, kidney disease, nerve and eye damage, and other risk factors like use of unhealthy dietary habits, lack of physical activity/low physical activity, tobacco, alcohol, overweight/obesity and high levels of harmful blood fats/hyperlipidaemia (on lipid control with statins), etc
  - Other considerations such as age, sex (male/female) and body weight.

There are several classes of medicines that can be used for the management of hypertension, diabetes and common cancers. Every state has its Essential Drug List (EDL) for common diseases available. The essential drugs for Diabetes are expected to be available at the PHC, CHC and higher health facilities. This essential drug list is updated on a regular basis and varies state-wise.

Medicines for Type 2 diabetes are available free of cost to those patients who use government health facilities. The drugs are prescribed by the medical officer and the patient should be given a month's supply of drugs. For diabetes, both oral drugs and insulin injections can be provided based on the decision of the Medical Officer. The patient should be able to collect refills every month from the nearest health facility. This could be a Sub-Centre (SC) or a Primary Health Centre (PHC). The blood sugar reading should be monitored regularly. The frequency depends on the advise of the medical officer.

You with support of the ASHA will be responsible for:

- ◆ Raising awareness on diabetes, generally to prevent the onset of diabetes and its complications in the community

- ◆ Motivating pregnant mothers for blood glucose testing as a part of their antenatal care. Pregnant women who have diabetes should be encouraged to have good control of their sugar levels to reduce the risk of complications during pregnancy as well as congenital defects in the foetus.
- ◆ Encourage the patient for early detection of complications-examine their feet daily for sensations, look for foot injuries, regular eye check-up, maintain oral hygiene, etc.
- ◆ Help in identifying symptoms of hypoglycemia and management of hypoglycemia.
- ◆ Monthly monitoring of blood sugar level
- ◆ Providing support to them and their family members through the consultation and diagnostic processes as required
- ◆ Compliance to treatment plan for drugs as prescribed by the medical officer and encouraging the patients not to stop or change the dose of medicine without medical advise
- ◆ Ensure that the patient does not share the medicine with other diabetic patients as every patient is prescribed as per his / her requirement
- ◆ The patient's blood sugar is under control
- ◆ Follow-up: Check-up at the PHC/CHC as advised to the patients
- ◆ Accompany the ASHA in regularly conducting home-visits by prioritizing those households which are vulnerable and marginalized where there are treatment defaulters or those who experience complications and bring these cases to the notice of the Medical Officer.

Most Type 2 diabetes patients are usually initiated on one or more oral anti-diabetic medicines. Over a period, they will need two or more oral drugs to control their blood glucose levels. These are-

- ◆ Biguanides (Metformin)
- ◆ Sulphonylureas (Glibenclamide)

**Table 8: Dosage and contraindications of Common anti-diabetic medications<sup>12</sup>**

Medicine class	Name	Dosage	How it works	When to take
Biguanides	Metformin	250mg to 2000mg/day	Lowers the amount of sugar produced by the liver. Helps body use insulin better.	After a main meal
Sulfonylureas	Glibenclamide	Glibenclamide varies from 2.5-20mg/day given in one or two doses.	Increase the amount of insulin released by pancreas.	30 minutes before meals.

<sup>12</sup>Source: Adapted from the Manual for Medical Officer-National Programme for Prevention and Control of Cancer, Diabetes, Cardiovascular Disease and Stroke (NPCDCS), 2008-2009.

### **Injectable medicine for diabetes (Insulin)**

Insulin is another form of drug therapy used for diabetic patients. Insulin is given in the form of injections. It may come in a vial and syringe; or a device that looks like a pen which is easier to use and measures the correct dose. There are three types of insulin-Short-acting, Long-acting and Mixed dose or pre-mixed. People who have Type 1 diabetes require insulin every day to be healthy. Type 2 diabetic patients can also be advised to take insulin, in combination with oral medicines to help achieve good control of diabetes. Medical Officer at the PHC, will determine the need of insulin, type of insulin and dose for an individual depending on the blood sugar profile of the diabetic person.

As explained earlier patients with diabetes are prone to problems such as foot ulcers and eye problems. You should be able to provide all diabetic patients in your community with advise on foot care, and motivate them for regular eye checkup.

### **Education of the patient for foot care**

- ◆ Inspect your feet daily for cracks, blisters, infections, and injuries. If you can't check your own feet, have someone else do it for you.
- ◆ Cleanse your feet daily as you bathe or shower, using warm water and mild soap. Dry your feet with a soft towel making sure to dry between the toes. Don't use hot water. You may burn your skin as you may not be able to feel the hotness of the water.
- ◆ Apply oil to dry skin to keep the skin soft and free of cracks.
- ◆ Clip toenails straight across. Use a nail cutter; don't use scissors
- ◆ Always wear something on your feet (socks, slippers, shoes) to protect from injury - even in your house.
- ◆ Choose soft good shoes. Let them be a size bigger than what you feel is appropriate. Wear socks made of cotton or wool (in winter).
- ◆ Treat minor breaks in the skin promptly. Cleanse the area with soap and water, dry, and cover with clean gauze. Observe for signs of infection such as redness, swelling, warmth, pain or drainage. Don't put weight on the foot that has an injury.
- ◆ See your doctor to check your feet during your regular visits for diabetes care. Take off your shoes and socks at every visit.



## **4.3. Cardiovascular and Cerebrovascular Diseases (Heart Attack and Stroke)**

In this chapter, you will learn about:

- ◆ What are Cardiovascular Diseases (CVDs) and Cerebrovascular diseases?
- ◆ What are the risk factors of Cardiovascular Diseases and Cerebrovascular diseases??
- ◆ What is Atherosclerosis and Hyperlipidemia?
- ◆ Warning signs of Heart Attack and Stroke
- ◆ Prevention of Heart Attack and Stroke

### **What are Cardiovascular Diseases (CVDs)?**

Cardiovascular Diseases (CVDs) is a general term for conditions affecting the heart or blood vessels. It is associated with damage to arteries in organs such as the brain, heart, kidneys and eyes. The most common cardiovascular disease includes coronary heart disease like heart attack.

### **What are Cerebrovascular Diseases?**

Cerebrovascular diseases are conditions caused by problems that affect the blood supply to the brain such as stroke, Transient ischemic attack, etc.

### **Risk factors of Cardiovascular Diseases and Cerebrovascular Diseases**

The common risk factors are as follows-

- ◆ Advancing age
- ◆ Family History
- ◆ Gender- A man is at a greater risk of heart disease than a pre-menopausal woman. But once past the menopause, a woman's risk is similar to a man's. Risk of stroke is similar for men and women.
- ◆ Unhealthy diet- high in fat, sugar, salt, animal fat and low in fruits, vegetables, whole grains and whole pulses
- ◆ Lack of physical activity/low physical activity
- ◆ Use of Tobacco -smoking or chewing tobacco and passive smoking
- ◆ Excess intake of alcohol
- ◆ High blood pressure/Hypertension
- ◆ High blood glucose level/Diabetes
- ◆ Abnormal blood lipids (**Hyperlipidemia**)\* High total cholesterol, LDL-cholesterol and triglyceride levels, and low levels of HDL cholesterol
- ◆ Being overweight/obese
- ◆ Atrial fibrillation (a heart rhythm disorder-a form of irregular heartbeat)- risk factor for stroke
- ◆ Certain medicines may increase the risk of heart disease
- ◆ Stress, social isolation, anxiety and depression

## **Hyperlipidemia & Atherosclerosis**

Hyperlipidemia refers to the condition where there is high level of lipids (fats, cholesterol and triglycerides) circulating in the blood. These lipids can enter the walls of arteries and increase the risk of developing atherosclerosis. Lipids comprise of fats, cholesterol and triglycerides present in the blood.

- ◆ Cholesterol Cholesterol is found in foods especially animal products such as red meats- mutton, liver, kidney, egg yolk, chicken, fish and dairy products, fats like butter, ghee, vanaspati and processed foods/packaged foods can raise cholesterol levels. All plant/vegetable sources are cholesterol-free. There are two types of cholesterol: low-density lipoproteins (LDL) and high-density lipoproteins (HDL).
  - LDL Cholesterol- LDL cholesterol is considered the “bad” cholesterol because it leads to atherosclerosis. It carries the cholesterol around the body in the blood.
  - HDL Cholesterol- HDL cholesterol is considered “good” cholesterol because it helps remove LDL (bad) cholesterol from the blood.
- ◆ The other blood fat is Triglyceride which is the most common type of fat in the body. High levels of triglycerides in the blood are associated with atherosclerosis. A diet very high in simple sugars increases the level of triglycerides in blood.

## **Atherosclerosis**

In atherosclerosis, the walls of arteries/blood vessels become thick and stiff because of the buildup fatty deposits. The fatty deposits are called plaques or formation of clot. When this happens, the flow of blood is restricted. It can happen in any part of the body. Atherosclerosis happens over a period of time without causing symptoms.

The more risk factors one has the higher the chance of developing cardiovascular disease unless corrective action to modify risk factors is taken.

High levels of triglyceride combined with high levels of LDL cholesterol increase the risk for heart attack, stroke, diabetes, etc. High cholesterol and triglyceride levels have no symptoms. A blood test is the only way to detect them.

**Table 9: ATP III Classification of LDL, Total, HDL Cholesterol and Serum Triglycerides (mg/dl)<sup>13</sup>**

### **LDL Cholesterol**

Less than 100	Optimal
100-129	Near optimal/above optimal
130-159	Borderline high
160-189	High
More than and equal to 190	Very high

<sup>13</sup>Source-ATP III At-A-Glance: Quick Desk Reference, 2001. Available at- <https://www.nhlbi.nih.gov/health-pro/guidelines/current/cholesterol-guidelines/quick-desk-reference-html>.

### Total Cholesterol

Less than 200	Desirable
200-239	Borderline High
More than and equal to 240	High

### HDL Cholesterol

Less than 40	Low
More than and equal to 60	High

### Serum Triglycerides

Less than 150	Normal
150-199	Borderline high
200-499	High
More than and equal to 500	Very high

#### 4.3.1. Heart Attack

A heart attack (myocardial infarction) occurs when the heart's supply of blood is stopped due to deposition of fat, thus blockage in the blood vessel of the heart. It is defined as severe chest pain for more than 30 minutes, radiating to left arm, shoulder or jaw and not relieved by pain killers.

#### Warning signs of Heart Attack

- ◆ Intense pain, pressure or constriction in the centre of the chest that lasts more than a few minutes, or that goes away and comes back
- ◆ Nausea, swelling or unconsciousness.
- ◆ Discomfort in other areas of the upper body such as pain or discomfort in one or both arms, the back, neck, jaw or stomach.
- ◆ Shortness of breath with or without chest discomfort.
- ◆ Other signs like sweating, nausea or lightheadedness.



#### 4.3.2. Stroke

Stroke is a Cerebral Vascular Disease which is caused by atherosclerosis, due to narrowing and / or blockage of the blood vessels that flow to the brain.

Stroke is defined as paralysis or numbness of one side of the body, difficulty of speech, hearing, reading or writing. A stroke occurs when the blood supply to the brain is interrupted. This can happen either when a blood vessel in the brain or neck is blocked or bursts. If this happens, the brain is deprived of oxygen and parts of the brain may be permanently damaged. The consequences of a stroke can include problems with speech or vision, lead to weakness or results in paralysis.

## **Transient Ischemic Attacks (TIAs)**

Just as stroke occurs when the flow of blood is blocked, TIAs happen when there is a brief blockage. The temporary loss of blood to the brain causes a brief, sudden change in brain function. This may manifest as temporary numbness or weakness on one side of the body, loss of balance, confusion, blindness in one or both eyes, double vision, difficulty speaking, or a severe headache. But these will disappear quickly and permanent damage is unlikely. A TIA can be a warning that one is at risk of stroke sometime in the future.

## **Warning signs of Stroke**

The signs of stroke appear suddenly and often there is more than one sign at the same time.

- ◆ Sudden numbness or weakness of the face, arm or leg, especially on one side of the body
- ◆ Remember FAST
  - F :Facial drooping- the person's face may have fallen on one side, they may be unable to smile, or their mouth or eye may have drooped
  - A : Arm weakness- the person may be unable to raise one or both arms and keep them up as a result of weakness
  - S : Speech difficulties- the person may have slurred speech and difficulty finding words or understanding what is said to them
  - T : Time- to call for emergency
- ◆ Sudden confusion, trouble speaking or understanding
- ◆ Sudden trouble seeing in one or both eyes
- ◆ Sudden trouble walking, dizziness, loss of balance or coordination
- ◆ Sudden severe headache with no known cause

Heart attack and Stroke are both an emergency condition, which can kill or leave a person with a permanent disability, so refer to the nearest health facility within one hour (called the golden period).

## **Prevention of Heart Attack and Stroke**

Eating a healthy diet, being physically active, avoiding the use of tobacco in any form/ avoiding exposure to second-hand smoke, reducing the intake of alcohol amongst heavy drinkers, managing stress, maintain healthy weight, people who are overweight/obese should lose weight, restriction of caffeinated beverages, etc. are lifestyle changes. The details of these messages have been covered in the chapter on Health Promotion. In addition, maintaining healthy levels of blood pressure, blood sugar and blood fats can prevent heart attack and stroke in an individual.

## **The role of ANM in control of Heart Attack and Stroke (The following steps can be undertaken with support of ASHA)**

Knowing the warning signs of heart attack and stroke and seeking immediate medical help can improve the outcomes. Individuals with any of the signs of heart attack and stroke should be referred immediately to a CHC for assessment and management.



### **Simple ways of preventing heart attack and stroke are-**

- ◆ Ensure that all above 30 years of age are screened annually for hypertension and diabetes.
- ◆ Blood pressure and blood sugar should be monitored regularly in high-risk individuals – including those with a family history of stroke or heart attack.
- ◆ Motivate those with high blood pressure and high blood sugar to change their lifestyle (as given in Health Promotion chapter) and regularly take their medicines to keep the BP or glucose under control.
- ◆ Create awareness among the community on the warning signs of heart attack and stroke and these are both preventable and treatable.
- ◆ Create awareness among the community on the services available for early management of heart diseases and stroke in health facilities.
- ◆ Emphasize that if there are any signs of heart attack or stroke, she/he should seek immediate medical attention by a qualified health professional at the higher facilities.

## **4.4. Common Cancers (Cervix, Breast And Oral)**

In this Chapter, you will learn about:

- ◆ Common types of Cancer i.e. Cervical Breast and Oral Cancer.
- ◆ Risk factors of common cancers.
- ◆ Common signs and symptoms of common cancers.
- ◆ Screening of common cancers
- ◆ Flowcharts for Screening and Management of common cancers

### **Burden of common Cancers in India**

- ◆ In India, it is estimated that the new cancer cases will rise from nearly one million new cases in 2012 to over 1.5 million by 2035.
- ◆ Breast cancer has emerged as one of the leading causes of cancer among women (14.3%) in India with 1,44,937 new cases and 70,218 deaths reported in 2012.
- ◆ Cervical cancer in India is the second most common cancer in women (12.1%).
- ◆ Every year, around 1.23 lakh new women are diagnosed with cervical cancer and 67,500 of these women die of the disease in India.
- ◆ Oral cancer accounts for around 7.2% of all cancers in India with 77,003 new cases and 52,067 deaths reported in 2012.

### **What is Cancer?**

Cancer is a disease caused by uncontrolled division of cells in any part in the human body. Normally the cell growth is kept under control by the body's immune system. It is only when these cells start to divide uncontrollably, forming lumps or growths, that Cancer is caused. Growths like this are called tumours. There are two types of tumours-malignant (cancerous) and benign (non-cancerous).

A malignant tumour never stops growing and can-

- ◆ spread into the surrounding tissue,
- ◆ destroy the surrounding tissue, and
- ◆ cause other tumours to develop

Malignant tumours can be life-threatening. Benign tumours usually do not cause much damage and are not normally life-threatening. The point at which the tumour starts is called the primary site. Cancer develops in several phases depending on the type of tissue affected. There are various kinds of cancers that are prevalent in our country. In this module we are specifically addressing the three most commonly occurring cancers in India- cervix and breast cancers among women and oral cancers among women & men.

These three cancers- cervix, breast and oral cancer together account for approximately 34% of all cancers in India and constitute a public health priority. If these cancers are diagnosed early and treated appropriately, chances of cure and survival are very good. Thus, regular screening programmes which can diagnose cancers at early stages or at precancerous stages are an important preventive health programme. A small percentage of pre-cancerous lesions if not treated, may later develop into cancer. Table 10 below shows screening and follow up processes for common cancers.

**Table 10: Screening and follow up processes for Common Cancers (Cervix, Breast and Oral)<sup>14</sup>**

Cancer type	Age of beneficiary	Methods of screening	Frequency of screening	If positive
Cervical	30-65 years	Visual Inspection with Acetic Acid (VIA)	Once in 5 years	Referred to the CHC/DH/GH for further evaluation and management of pre-cancerous conditions where gynaecologist/trained Lady Medical Officer is available
Breast	30-65 years	Clinical Breast Examination (CBE)	Once in 5 years	Referred to surgeon at CHC/DH/GH for confirmation using a Breast ultra sound probe followed by biopsy as appropriate
Oral	30-65 years	Oral Visual Examination (OVE)	Once in 5 years	Referred to Surgeon/ Dentist/ ENT specialist/ Medical officer at CHC/DH/GH for confirmation and biopsy*.

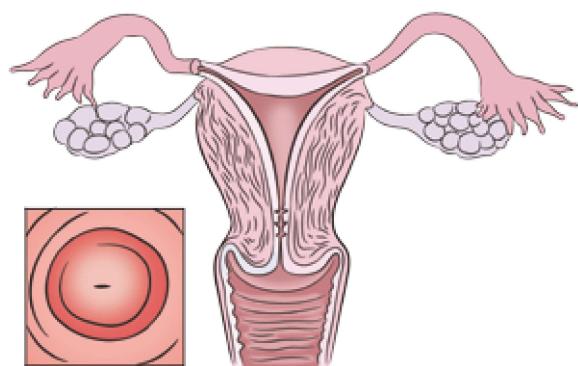
**Biopsy\***- A biopsy is a sample of tissue taken from the body in order to help diagnose an illness or identify a cancer. The biopsy specimen either to be sent to the nearest Medical college or using the mechanism under the Free Diagnostics Initiative under NHM, to the nearest NABL certified laboratory.

#### **4.4.1. Cervical Cancer**

The cervix is the lower, narrow end of the uterus (the organ where a foetus grows) in the human female reproductive system. Cervical cancer occurs when abnormal cells develop and spread in the cervix. Human Papilloma virus (HPV) infection, which is a sexually transmitted infection, is the primary cause of this cancer. HPV prevalence increases with multiple sexual partners for both spouse, and poor genital hygiene of both partners. However, there are other factors that may cause Cervical cancer.

##### **Risk factors for cervical cancer**

- ◆ Human papilloma virus (HPV) infection
- ◆ Smoking
- ◆ Young age at first sexual activity
- ◆ Multiple sexual partners
- ◆ Unprotected sex or poor sexual hygiene
- ◆ Early marriage



<sup>14</sup>Source- Operational Framework-Management of Common Cancers. Ministry of Health and Family Welfare, Government of India, 2016.

- ◆ Early child birth- in women younger than 17 years
- ◆ Frequent child birth
- ◆ Weakened immune system such as HIV/AIDS

Although these risk factors increase the chance of developing cervical cancer, many women with these risks do not actually develop this disease.

### **Common Signs and Symptoms of cervical cancer**

In the early stages, there may not be any symptoms. By the time symptoms appear, the disease may have already spread. Common symptoms are-

- ◆ Vaginal bleeding between periods
- ◆ Menstrual periods that are longer or heavier than usual
- ◆ Post-menopausal bleeding
- ◆ Bleeding after sexual intercourse
- ◆ Pain during sexual intercourse
- ◆ Smelly vaginal discharge
- ◆ Unusual vaginal discharge tinged with blood
- ◆ Backache
- ◆ Lower abdominal pain
- ◆ Fatigue/extreme tiredness
- ◆ Unexplained weight loss
- ◆ Pain in legs
- ◆ Pain during urination

### **Screening for Cervical Cancer**

Screening for cancer is conducted before a person has any symptoms. Screening for cervical cancer is important, since during the early stages, women may experience no symptoms. When abnormal tissue or cancer is found early, it may be easier to treat. By the time symptoms appear, cancer may have begun to spread.

The symptoms mentioned above, can also be caused by conditions other than cervical cancer. For example, an infection can cause pain or bleeding. Still, if a woman has any of these signs or other suspicious symptoms, they should be advised to visit a healthcare professional at the earliest.

Cervical cancer is one of the most successfully treatable cancers when detected at early stage as the chances of detecting pre-cancerous lesions are maximum. A common method for screening



cervical cancer is through a simple test known as Visual Inspection with Acetic Acid (VIA). This test helps to detect abnormal cells in the cervix.

Screening of cervical cancer will normally be undertaken at a PHC or CHC by a trained service provider preferably a lady physician or a staff nurse/ANM, etc. Screening should be undertaken in a separate room and privacy needs to be maintained. In many states, trained ANMs have been performing VIA. With adequate training, ANMs may be encouraged to conduct cervical cancer screening by VIA, provided the referral networks are in place.

- ◆ Women who are 30 years of age and above should be screened by a trained provider-lady physician or staff nurse at least once in five years except in the following situations- menstruation, pregnancy, within 12 weeks of delivery/ abortion and previous history of treatment for Cancer of the Cervix. Approximately 30 women can be screened in a day, so screening should be planned accordingly
- ◆ In the VIA test, application of acetic acid on the mouth of the cervix allows the health care provider to see the difference between a healthy cervix and one that looks abnormal. The acetic acid turns abnormal cells white. A positive test, does not mean the woman has cervical cancer. Once an abnormality is detected, the individual should be referred to the PHC/CHC/District Hospital (DH)/ General Hospital (GH) for further evaluation and management of pre-cancerous conditions by a procedure called Colposcopy, to a gynaecologist/trained Lady Medical Officer wherever available.

**Figure 4: VIA Negative- Normal Cervix**

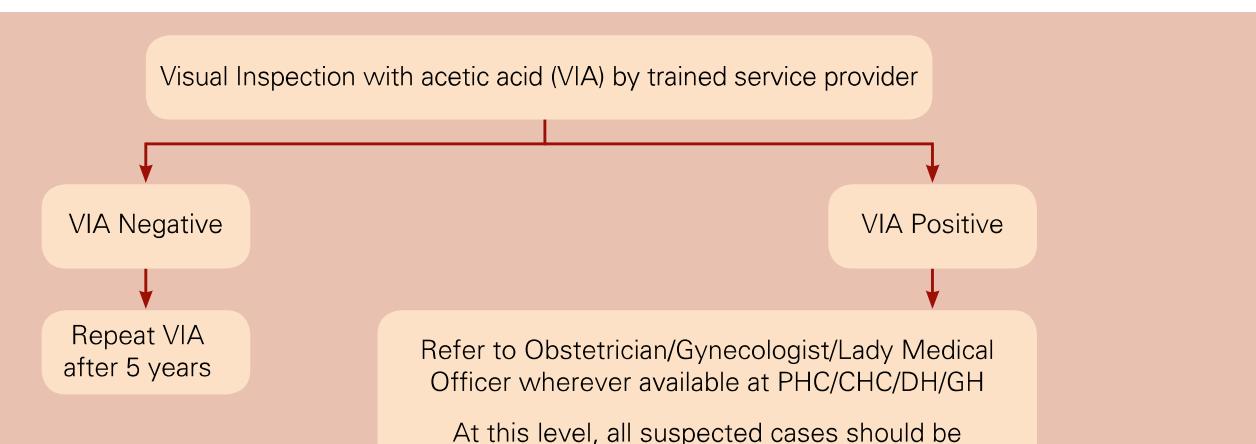


**Figure 5: VIA Positive (Aceto-white lesion)-Abnormal Cervix**



### Management of Cervical Cancer

**Figure 6: Flowchart showing the Screening and Management of Cervical Cancer**



#### **4.4.2. Breast Cancer**

Breast cancer is a group of cancer cells (malignant tumour) that develops from the cells of the breast.

##### **Risk factors for Breast Cancer**

- ◆ Women are more affected than men. Men can have breast cancer, too, but this disease is about 100 times more common in women than in men
- ◆ Family History
- ◆ Early onset of menstrual period (before age 12 years)
- ◆ Late age at first child birth (after age 30 years)
- ◆ No pregnancy- never having a full-term pregnancy
- ◆ Shorter duration or no breastfeeding
- ◆ Late menopause (after age 55 years)
- ◆ Previous treatment using radiation therapy
- ◆ Being overweight/obese especially after menopause
- ◆ Smoking and second-hand smoke
- ◆ Lack of physical activity
- ◆ Consumption of alcohol
- ◆ Using combination hormone therapy after menopause - Hormone therapy with estrogen (often combined with progesterone) during/and after menopause for more than five years raises the risk for breast cancer

Although these risk factors increase the chance of developing breast cancer, many women with these risks do not develop this disease.

##### **Common warning signs of Breast Cancer**

- ◆ Lump in the breast or underarm area (armpit).
- ◆ Thickening or swelling of part of the breast.
- ◆ Irritation or puckering/dimpling of breast skin.
- ◆ Redness or flaky skin in the nipple area or the breast.
- ◆ Pulling in of the nipple or change in position or shape and pain in the nipple area.
- ◆ Nipple discharge other than breast milk, including blood.
- ◆ Any change in the size or the shape of the breast.
- ◆ Constant pain in any area of the breast or armpit.

In case the woman notices any such changes as above, she should promptly visit the health centre or a health professional.

## **Screening for Breast Cancer**

Screening or regular check-up for breast cancer is important. Prompt diagnosis of breast cancer in the early stage is very important.

- ◆ Women who are 30 years of age and above should be screened by a trained provider at least once in five years.
- ◆ Women should be educated about the warning signs/symptoms of breast cancer (mentioned above) during screening visit. If the woman experiences any of these, she must be advised to visit the health facility irrespective of her next screening date.
- ◆ Screening for breast cancer can be done by a trained health worker -lady physician, staff nurse or an ANM, who have received training for conducting Clinical Breast Examination (CBE) to help identify problems before a woman has any signs and provide an opportunity for early treatment or prevention (e.g., breast cancer). These examinations will also give you an opportunity to talk with the woman about her health and allow appropriate counselling if her lifestyle puts her health at risk. In addition, having regular breast examinations helps the women to learn about her body.
- ◆ Approximately 30 women can be screened in a day for Clinical Breast Examination (CBE), so screening should be planned accordingly
- ◆ CBE can be conducted at the village level or at the sub-centre, in a separate room and privacy should be maintained.
- ◆ If there is any abnormal finding in CBE, the woman should be referred to a medical officer or surgeon at CHC/DH/GH for further evaluation and management.

The women should also be taught to undertake Breast Self-Examination (BSE). BSE is conducted by the woman herself, to detect any abnormality or changes in her breasts. The practice of BSE empowers women to take responsibility for their health. However this is not a substitute for examination by a trained provider. This test should be performed monthly at home to identify any changes in the breast.

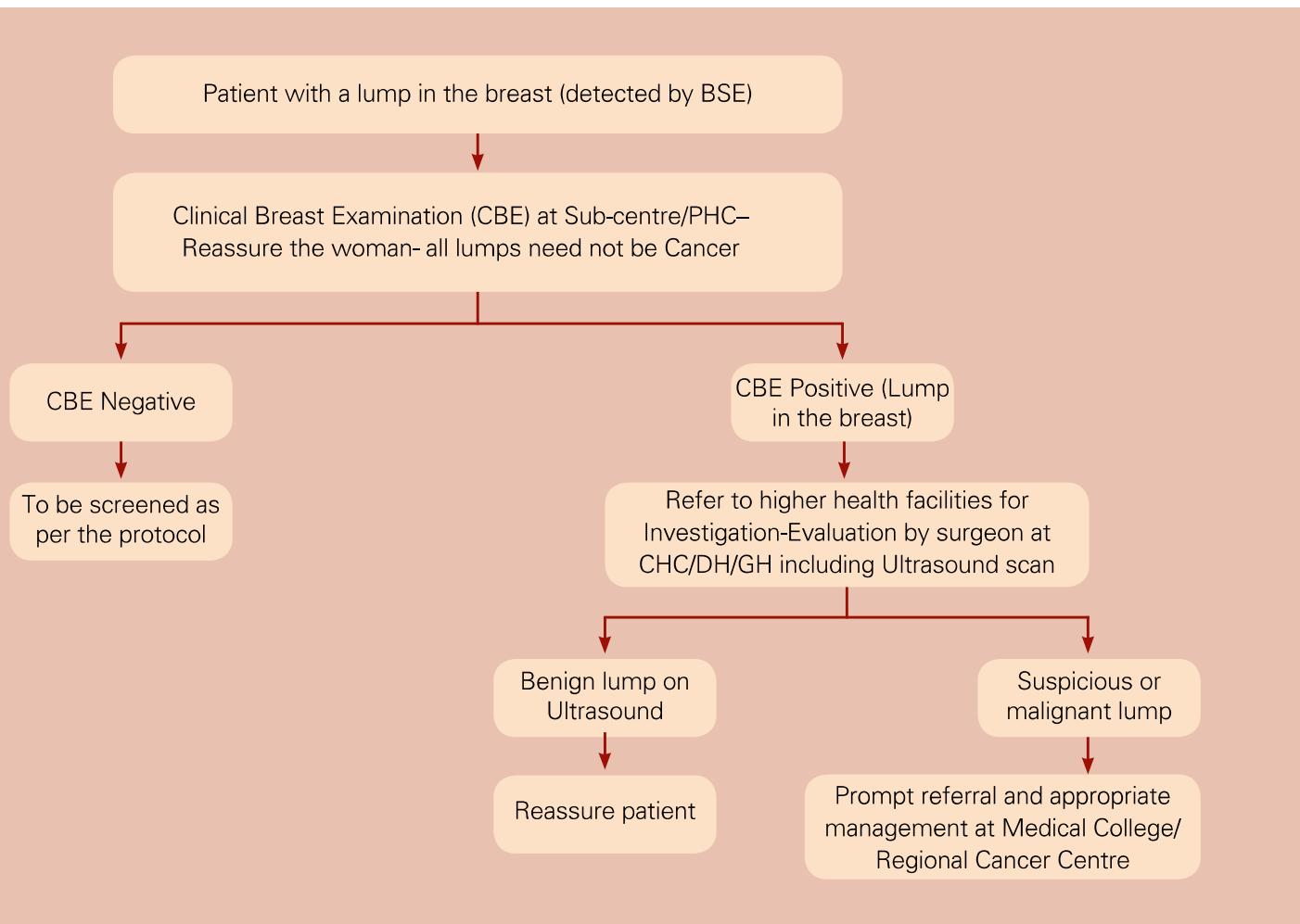
- ◆ It is best to examine the breasts **7–10 days after the first day** of the menstrual period (This is the time when the breasts are less likely to be swollen and tender).
- ◆ Breast should be examined every month, even after menstrual period has stopped forever.
- ◆ If not menstruating, pick the same day each month (e.g., the first day of the month) to examine the breasts.

The ASHA will educate the women in her area about the steps in BSE. You along with the ASHA will motivate the women to do BSE.

The details of the procedure of Screening Breast Cancer by Breast Self-Examination (BSE) and Clinical Breast Examination (CBE) is given in Annexures- 5 and 6, respectively.

## Management of Breast Cancer

**Figure 7: Flowchart showing the Screening and Management of Breast Cancer**

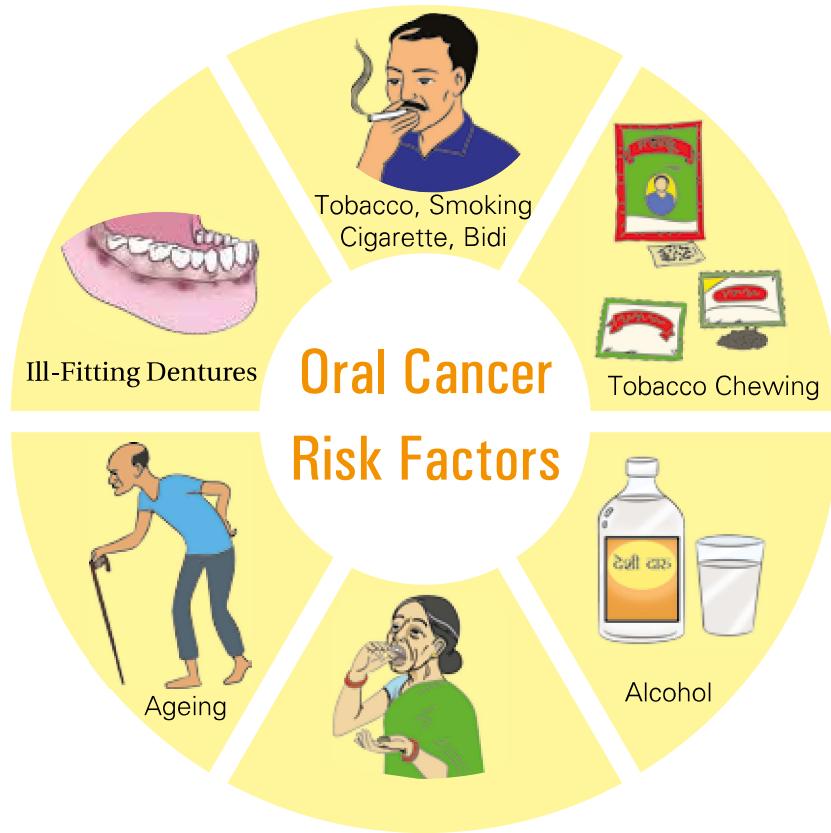


### 4.4.3. Oral Cancer

It is the cancer that occurs in the oral cavity. The oral cavity includes the lips, the inner lining of the lips and cheeks (buccal mucosa), teeth, gums, front of the tongue, floor of the mouth below the tongue, and the bony roof of the mouth (hard palate). Oral cancer is both preventable and curable. There is usually a long natural history and most cases of oral cancer arise from pre-cancerous lesions. Therefore, there is ample opportunity for intervention before actual malignancy develops. Also oral cancer responds well to treatment if detected early. It is a common cancer in India because of the high prevalence of tobacco chewing.

#### Risk factors for Oral Cancer

- ◆ Oral cancer is twice as common in men as in women because of increased use of tobacco/alcohol
- ◆ People with certain syndromes caused by inherited defects in certain genes have a high risk of mouth and throat cancer
- ◆ Tobacco consumed in any form-smoking and chewing tobacco products

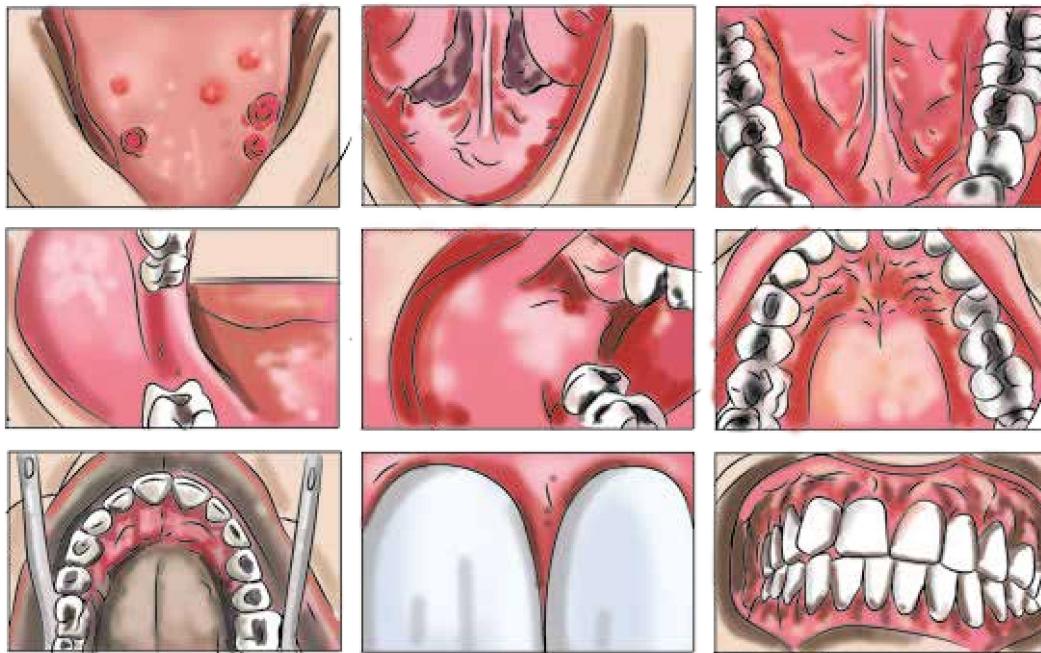


- ◆ Chewing betel quid (paan), which is made up of areca nut (*supari*) and lime (*chuna*) wrapped in a betel leaf, chewing gutka-a mixture of betel quid and tobacco
- ◆ Alcohol intake
- ◆ Alcohol intake and consumption of tobacco together
- ◆ Weakened Immune System-more common in people who have a weak immune system
- ◆ Human Papilloma Virus (HPV)
- ◆ Poor oral hygiene
- ◆ Sharp teeth and ill-fitting dentures

Chronic exposure to these risk factors causes changes in the oral mucosa and these changes are visible as pre-cancerous lesions. Over time, malignancy may develop in these lesions.

#### **Common Signs and Symptoms of Oral Cancer**

- ◆ Mouth ulcers that persist for more than three weeks
- ◆ Persistent pain in the mouth
- ◆ A lump or thickening in the cheek
- ◆ A white or red patch on the gums, tongue, tonsil, or lining of the mouth
- ◆ A sore throat or a feeling that something is stuck in the throat
- ◆ Difficulty in chewing or swallowing
- ◆ Difficulty in moving the jaw or tongue
- ◆ Difficulty in tolerating spicy foods



- ◆ Bleeding or numbness of the tongue or other area of the mouth
- ◆ Swelling of the jaw that causes dentures to fit poorly or become uncomfortable
- ◆ Loosening of the teeth or pain around the teeth or jaw
- ◆ Changes in voice or having speech problems
- ◆ A lump or mass in the neck
- ◆ Weight loss
- ◆ Constant bad breath
- ◆ Excessive salivation
- ◆ Repeated biting of cheeks because of sharp teeth

Many of these symptoms can also be caused by factors other than cancer. So, it is very important to see a health professional or dentist if any of these conditions lasts more than 2 weeks so that the cause can be found and treated.

### **Screening for Oral Cancer**

Many pre-cancerous conditions and cancers of the oral cavity can be found early during routine screening by self-exam or by a health professional. Regular dental checkups that include an exam of the entire mouth are important in finding oral cancers (and pre-cancerous conditions) early.

- ◆ Every individual (woman or man) 30 years and above should be screened by a trained provider, at least once in five years.
- ◆ Approximately 30 individuals can be screened in a day so screening should be planned accordingly.
- ◆ Those who use tobacco and alcohol in any form and have any of the above signs/symptoms should be encouraged to be screened irrespective of their age.

- ♦ Screening for oral cancer can be done by a trained health worker such as ANM at the centre or health facility, this is called as Oral Visual Examination (OVE). Individuals should be taught to undertake self-examination of the oral cavity (as given below).
- ♦ All habitual tobacco and alcohol users and young individuals who are not 30 years of age or above, and are using tobacco and alcohol in any form should be motivated to do self-examination of oral cavity on a monthly basis or undergo clinical examination by a trained provider.
- ♦ Individuals with suspicious oral lesions or any abnormality should visit the health facility for further evaluation and management.
- ♦ Oral cavity should be examined thoroughly using a mouth mirror and a white light. A torch can be used for proper light. Normal oral cavity lining is soft and pink.

The ANM is required to screen using OVE. The detailed steps of OVE are given in Annexure- 7.

**Steps to undertake self-examination of the oral cavity is as follows-**

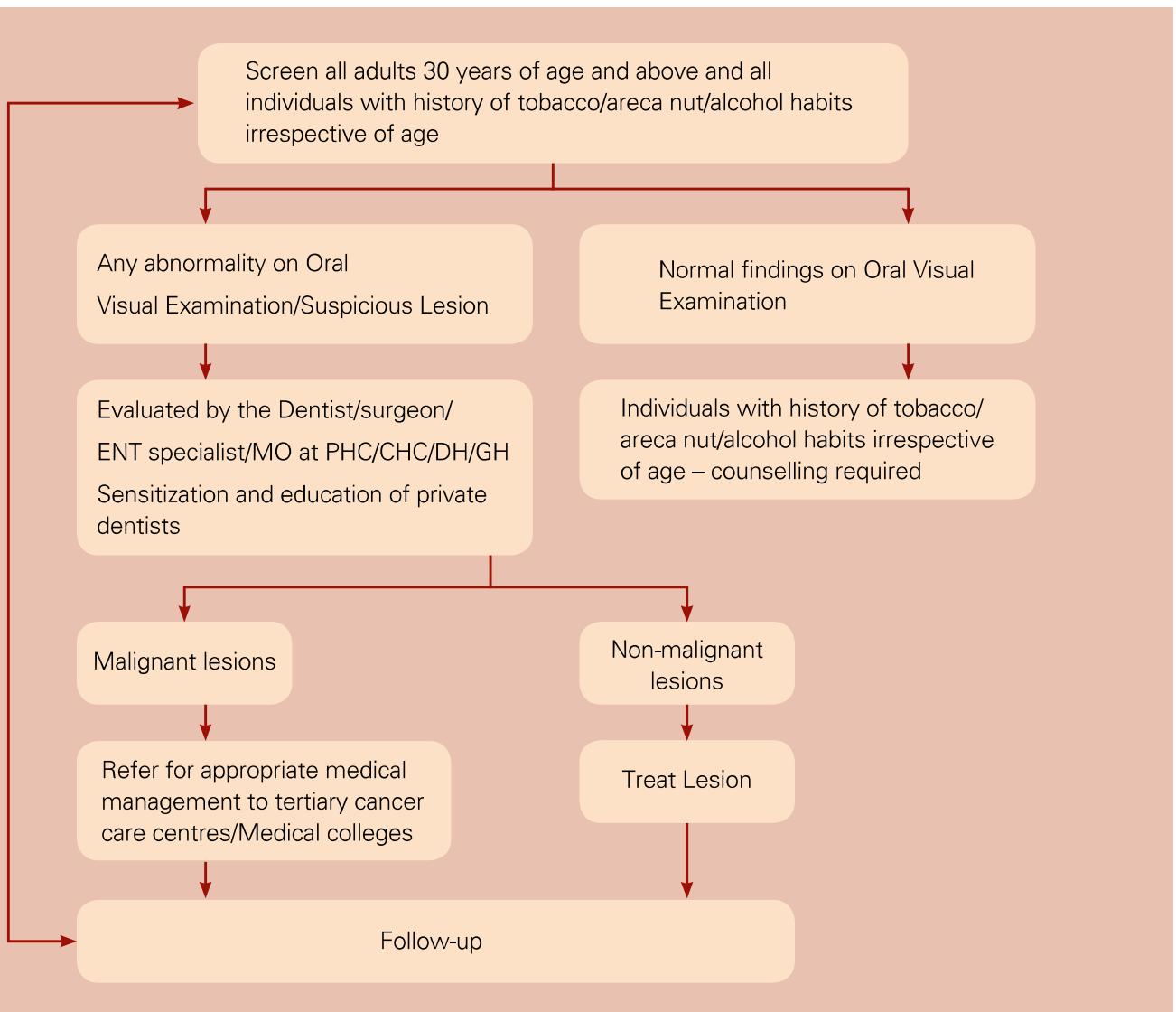
- ♦ Ask the individual to:
  - Rinse the mouth with water and stand before a mirror in adequate light.
  - Look in the mirror for any abnormality in the mouth
  - If any abnormality- patch (white/red), ulcer, rough area, granular area or swelling in the mouth is found then the individual must visit the health facility for further examination and management by a health professional.

## **Management of Oral Cancer**

### **Treatment of Common Cancers**

- ♦ Ensure that every patient complies with therapy advised
- ♦ If follow-up care is required at the health centre level, make sure that detailed instructions are provided by the treating institution

**Figure 8: Flowchart showing the Screening and Management of oral cancer**



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# **Annexures**



Annexure 1

## Format for ASHA

**ASHA Name**

**Village Name**

**Hamlet Name**

**Sub centre Name**

**PHC Name**

### Part A) Family folder

1. Household details –	
i. Number/ID	
ii. Name of Head of the Household	
iii. Details of household amenities –	Please specify
a) <b>Type of house</b> ( <i>Kuccha/Pucca with stone and mortar/Pucca with bricks and concrete/ or any other specify</i> )	
b) <b>Availability of toilet</b> ( <i>Flush toilet with running water/flush toilet without water/ pit toilet with running water supply and pit toilet without water supply/ or any other specify</i> )	
c) <b>Source of drinking water</b> ( <i>Tap water/hand pump within house/hand pump outside of house/ well / tank/ river/ pond/ or any other specify</i> )	
d) <b>Availability of electricity</b> ( <i>Electricity supply/generator/ solar power/kerosene lamp/ or any other specify</i> )	
e) <b>Motorised Vehicle</b> ( <i>Motor bike/Car/Tractor/ or any other specify</i> )	
f) <b>Type of Fuel used for cooking</b> – ( <i>Firewood/ Crop Residue/ Cow dung cake/ Coal / Kerosene/ LPG /or any other specify</i> )	
g) <b>Contact details – (Telephone number of head of the family)</b>	

S. No	Individual Name	Aadhaar ID (if Aadhaar id is not available please add details of other ids like Voter id or Ration card)	Individual Health ID (issued by SHC/ ANM)	Sex	Date of birth	Age	Marital Status	Beneficiary of any health insurance scheme	Current Status of residence
								Yes/ No	Details of the scheme (as applicable)
									Staying at the house currently
									Migrated temporarily for work

## B) Individual Health Record

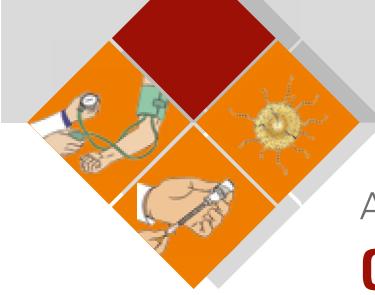
A) History		Known Medical illness	Date of diagnosis	Treatment	Any complications	Others
Individual Name				Currently under treatment		Discontinued
Individual ID						

## A) History

## B) Screening for NCD-

Screened for (specify date on which screening was done)	Screening result						Risk Factors	Other- Remarks			
Hypertension	Diabetes	Oral Cancer	Breast Cancer	Cervical Cancer	COPD (Respiratory Disorders)	Hypertension	Diabetes	Oral Cancer	Breast Cancer	Cervical Cancer	COPD (Respiratory Disorders)

### C) Treatment Details



## Annexure 2

# Community Based Assessment Checklist (CBAC) for Early Detection of NCDs

General Information	
Name of ASHA	Village
Name of ANM	Sub Centre
PHC	Date
Personal Details	
Name	Any Identifier (Aadhaar Card, UID, Voter ID)
Age	State Health Insurance Schemes: (Y/N).....
Sex	Telephone No.
Address	

Part A: Risk Assessment				
Question	Range		Circle Any	Write Score
1. What is your age? (incomplete years)	30-39 years		0	
	40-49 years		1	
	≥ 50 years		2	
2. Do you smoke or consume smokeless products such as gutka or khaini?	Never		0	
	Used to consume in the past/ Sometimes now		1	
	Daily		2	
3. Do you consume alcohol daily?	No		0	
	Yes		1	
4. Measurement of waist (in cm)	Female	Male		
	80 cm or less	90 cm or less	0	
	81-90 cm	91-100 cm	1	
	More than 90 cm	More than 100 cm	2	
5. Do you undertake any physical activities for minimum of 150 minutes in a week?	At least 150 minutes in a week		0	
	Less than 150 minutes in a week		1	
6. Do you have a family history (any one of your parents or siblings) of high blood pressure, diabetes and heart disease?	No		0	
	Yes		2	
<b>Total Score</b>				

A score above 4 indicates that the person may be at risk for these NCDs and needs to be prioritised for attending the weekly NCD day.

**Part B: Early Detection: Ask if Patient has any of these symptoms**

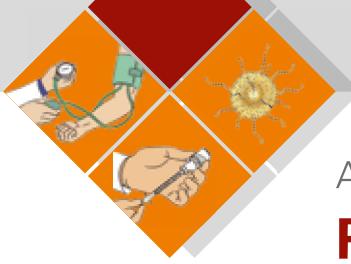
B1: Women and Men	Yes/No	B2: Women only	Yes/ No
Shortness of breath		Lump in the breast	
Coughing more than 2 weeks		Blood stained discharge from the nipple	
Blood in sputum		Change in shape and size of breast	
History of fits		Bleeding between periods	
Difficulty in opening mouth		Bleeding after menopause	
Ulcers/ patch/ growth in the mouth that has not healed in two weeks		Bleeding after intercourse	
Any change in the tone of your voice		Foul smelling vaginal discharge	

In case the individual answers Yes to any one of the above mentioned symptoms, refer the patient immediately to the nearest facility where a Medical Officer is available.

**Part C: Circle all that Apply**

Type of Fuel used for cooking- Firewood/Crop Residue/Cow dung cake/Coal/Kerosene

Occupational exposure- Crop residue burning/burning of garbage- leaves/ working in industries with smoke, gas and dust exposure such as brick kilns and glass factories etc.



### Annexure 3

## Reporting Proforma for Sub Centre

### Annexure 3A

Form 1														
National Programme on Prevention & Control of Cancer, Diabetes, CVDs & Stroke (NPCDCS)														
Reporting proforma for Sub Centre														
Name of the Sub-centre_____	PHC _____	Block/ Mandal _____												
District_____	State_____													
Month_____ Year _____														

#### Part A: Hypertension and Diabetes Screening

Name of the village	Total No. of NCD Checkups Done			No. of new persons Suspected for DM and referred for Confirmation			No. of new persons Suspected for HTN and referred for Confirmation			No. of known cases of DM on Follow-up			No. of known cases of HTN on Follow-up		
	Male	Female	Total	Male	Female	Total	Male	Female	Total	Male	Female	Total	Male	Female	Total
<b>Total</b>															

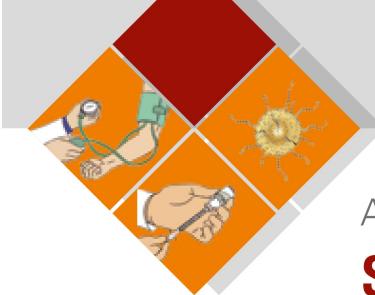
#### Part B: Screening for Common Cancers

Name of the Village	No. of persons screened for cancers			No. of persons suspected with cancer and referred to PHC/ CHC/ GH						No. of persons referred by the Sub-centre last month who underwent investigations at higher facility			Total No. of known Cancer patients in the Village		
				Oral			Breast	Cervical	Total						
	Male	Female	Total	Male	Female	Total									
<b>Total</b>															
<b>Signature</b>															
<b>Name and Designation</b>															
<b>Date of reporting</b> _____															

\*The Report should be filled by ANM of Sub centre and sent to MO I/C PHC on last day of the same month.

### **Annexure 3B**

NPCDCS Register for screening common NCDs in Government Health facilities To be filled by Sub centre, PHC, CHC and District NCD clinics



## Annexure 4

# Steps of Waist Circumference Measurement

### Tool

- Non-stretchable flexible measuring tape

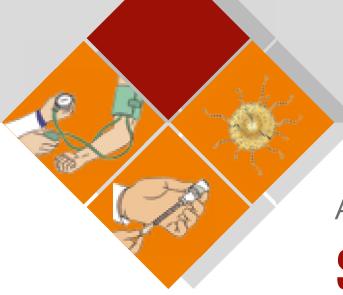
### Important point to keep in mind

- WC should be taken on standing posture

### Process steps

- Remove any layers of clothing blocking the waist. If the individual is unwilling to remove clothing the measurement can be taken over the thinnest layer of clothing.
- The individual stands straight looking in front with abdomen (stomach) relaxed, arms at side and their feet fairly close together (about 12- 15 cm) with their weight equally distributed across both feet
- You will stand in front, facing the subject. Find the midpoint between the lowest rib/bony point in front and top of hip bone in back. Waist circumferences can also be measured across the umbilical line (at the naval).
- The person should be asked to breathe normally. At the time of the reading of the measurement she/he asked to breathe out gently
- Place the tape firmly in a horizontal position making sure the measuring tape is parallel to the floor and not folded or twisted
- Record the reading at the end of the normal expiration/breathing
- The tape should be loose enough to allow to place one finger between the tape and the person's body but the tape should fit firmly but comfortably around the waist. The tape should not squeeze the skin
- Look at the place on the tape where the zero end meets the other end of the tape measure. The location of this meeting point is the waist measurement.
- Record the measurement in cms to the nearest 0.0 or 0.5 cm in the individual's card or your register. Example- If the exact measurement is 85.7 cm, it should be recorded as 85.5 cm and if it is 85.9 cm, then record the reading as 86 cm





## Annexure 5

# Steps of Breast self-examination (BSE)

## Five steps of BSE

**Step 1:** Begin by looking at your breasts in the mirror with shoulders straight and arms on hips.

what to look for:

- ◆ Any change from the usual size, shape, and colour
- ◆ Any visible distortion or swelling of the breast

If any of the following changes are seen, bring them to your doctor's attention:

- ◆ Dimpling, puckering, or bulging of the skin
- ◆ A nipple that has changed position or an inverted nipple (pushed inward instead of sticking out)
- ◆ Redness, soreness, rash, or swelling



Breast Self-Exam – Step 1

**Step 2:** Same changes to be looked for with arms raised.

**Step 3:** Also look for any signs of fluid coming out of one or both nipples (this could be a watery, milky, or yellow fluid or blood).



Breast Self-Exam – Steps 2 and 3

**Step 4:** Next, feel breasts while lying down, using the right hand to feel the left breast and then the left hand to feel the right breast. Use a firm, smooth touch with the finger pads of your hand, keeping the fingers flat and together. Use a circular motion, about the size of a quarter.

Cover the entire breast from top to bottom, side to side — from your collarbone to the top of the abdomen, and from the armpit to your cleavage.

- ◆ Follow a pattern to be sure that the whole breast is covered.
- ◆ Begin at the nipple, moving in larger and larger circles until the outer edge of the breast is reached.
- ◆ Ensure that all the tissue from the front to the back of the breasts is examined.: for the skin and tissue just beneath, use light pressure; use medium pressure for tissue in the middle of your breasts; use firm pressure for the deep tissue in the back.
- ◆ When the deep tissue is reached, the individual should be able to feel down to the ribcage.



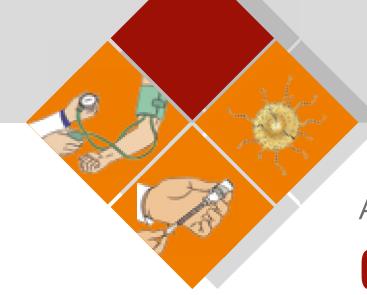
Breast Self-Exam – Step 4

**Step 5:** Finally, the breasts should be examined while standing or sitting. Many women find that the easiest way to feel their breasts is when their skin is wet and slippery, so this can be done while taking a bath. Using the same hand movements described in step 4.



Breast Self-Exam – Step 5

SOURCE: [http://www.breastcancer.org/symptoms/testing/types/self\\_exam/bse\\_steps](http://www.breastcancer.org/symptoms/testing/types/self_exam/bse_steps)



## Annexure 6

# Clinical Breast Examination (CBE)

Having regular breast examinations is an important part of improving every woman's health. The efficacy of CBE is dependent upon a number of factors including proper positioning of the lady, thoroughness of the search and the area covered and use of a consistent pattern of search. The purpose is to look at the breasts and check for differences in shape or size or other abnormalities.

### Tips When Performing Breast Examinations

- ◆ Be sensitive to the woman by giving her opportunities to express any concerns before and during the examination.
- ◆ Always respect the woman's sense of privacy (e.g., draw the curtains around the examining table, close the door or cover the window in the examination room).
- ◆ Speak in a calm, relaxed voice at all times and encourage the woman to ask questions at any time.
- ◆ If the woman is anxious, assure her that you will do your best to make the examination comfortable.
- ◆ Throughout the examination, approach the woman slowly and avoid any sudden or unexpected movements.
- ◆ Do not rush through the examination. Perform each step gently and ask her if she is having any discomfort during any part of the examination. Be aware of her facial expressions and body movements as indications that she is uncomfortable.
- ◆ Always take into consideration any cultural factors when deciding what clothing the woman should remove. Have a clean sheet or drape to cover the woman's breast if needed.
- ◆ Knowing that the examinations will be performed by a caring and competent provider may encourage the woman to continue coming to the clinic for her reproductive health needs.
- ◆ These examinations should be performed in a clean, well-lit, private examination or procedure room that has a source of clean water.

### Getting Ready

- ◆ Tell the woman you are going to examine her breasts.
- ◆ This is a good time to ask if she has noted any changes in her breasts and whether she does monthly breast self-examinations. Tell the woman that you will show her how to do a breast self-examination before she leaves.
- ◆ Wash your hands thoroughly with soap and water and dry them with a clean, dry cloth or allow them to air dry before beginning the examination.

- ◆ If there are open sores or nipple discharge, put new examination or high-level disinfected surgical gloves on both hands.
- ◆ Ask the woman to undress till the waist. With the woman undressed from the waist up, have her sit on the examining table with her arms at her sides.
- ◆ Examine both in sitting and lying down position.

## Performing a Breast Examination

**Steps of examination - CBE involves two main parts:**

- ◆ **Inspection** to identify physical signs of breast cancer.
- ◆ Palpation which involves using the finger pads to physically examine all areas of breast tissue including lymph nodes (underarm area) to identify lumps

### i. Inspection

- ◆ In the sitting position first visually inspect the breast, initially when woman is sitting up right with arms on her hips, and then with her arms raised over head (**Figures 6.1 and 6.2**).

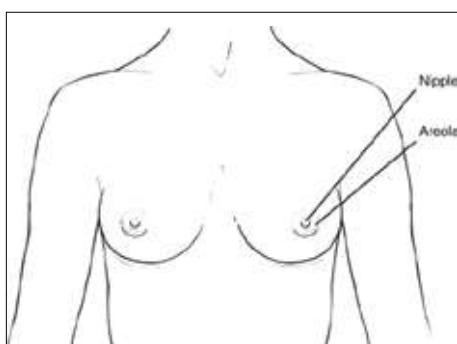
**Figures 6.1 and 6.2: Inspection of the breasts**



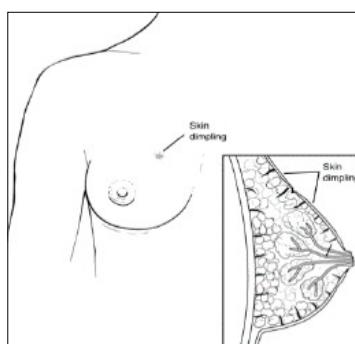
Note any change in symmetry of breast shape, size, skin changes—skin dimpling or retraction or ulceration the level of both nipples, retraction of nipple(s), inverted nipple.

- ◆ Look at the breasts for shape and size (Figure 6.3).
- ◆ Note any difference in shape, size, nipple or skin puckering or dimpling (Figure 6.4). Although some difference in size of the breasts is normal, irregularities or difference in size and shape may indicate masses. Swelling, increased warmth or tenderness in either breast may suggest infection, especially if the woman is breastfeeding.

**Figure 6.3: Appearance of Breasts**



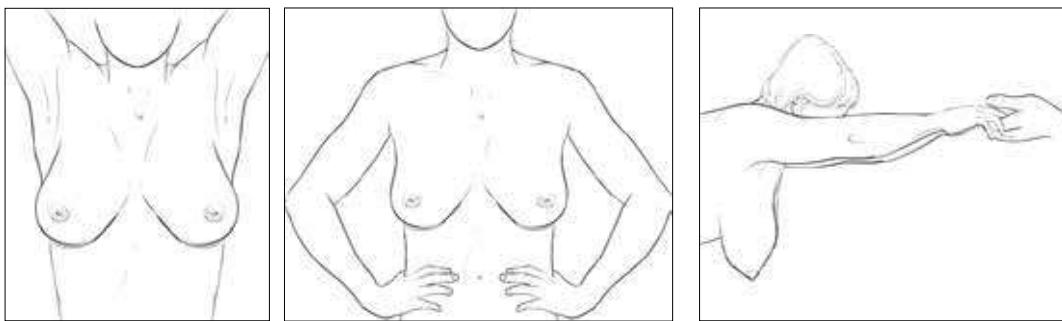
**Figure 6.4: Breast Puckering or Dimpling**



Look at the nipples and note their size and shape and the direction in which they point. Also check for rashes or sores and any nipple discharge.

- ◆ Have the woman first raise her arms over her head (Figure 6.5a) and then press her hands on her hips to contract her chest wall (pectoral) muscles (Figure 6.5b). In each position, inspect the size, shape and symmetry, nipple or skin puckering or dimpling of the breast and note any abnormalities. (These positions will also show skin puckering or dimpling if either is present.)
- ◆ Then have the woman lean forward to see if her breasts hang evenly (Figure 6.5c).

**Figures 6.5a, b and c: Appearance of Breasts (left to right): Arms over head, Hands on Hips, Leaning Forwards**



#### ii. Palpation:

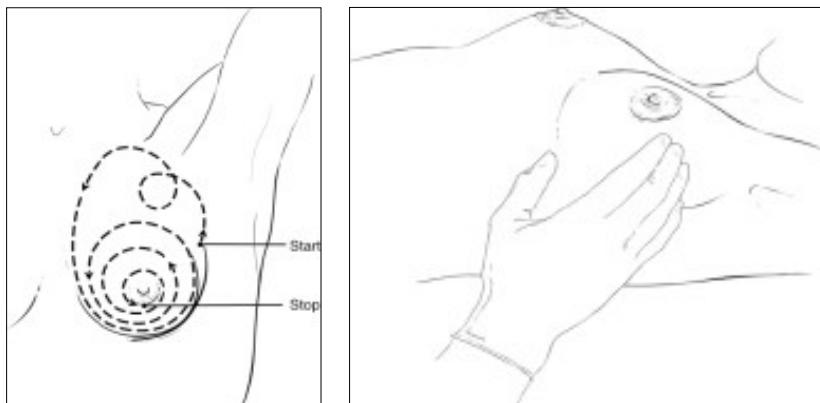
- ◆ Have the woman lie down on the examining table.
- ◆ Placing a pillow under her shoulder on the side being examined will spread the breast tissue and may help in examining the breast (Figure 6.6).
- ◆ Place a clean sheet or drape over the breast you are not examining.
- ◆ Place the woman's left arm over her head. Look at the left breast to see if it looks similar to the right breast and whether there is puckering or dimpling.
- ◆ Use "Dial of clock method" for palpation, first use the finger pads of the middle three fingers to palpate the entire breast, in overlapping circular motions, one area at a time. Repeat both parts of the examination on both the left and rights breasts.



- ◆ The finger pads of middle three fingers should be used to palpate the breast in circular motion
- ◆ Palpation pressure
  - i. Light pressure for superficial breast tissue
  - ii. Medium pressure for intermediate layer
  - iii. Deep pressure for tissue close to chest wall

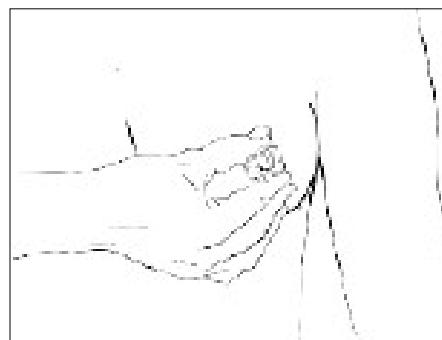
- ◆ Using the pads of your three middle fingers (**Figure 6.7a**), palpate the breast using the spiral technique. Start at the top outermost edge of the breast (**Figure 6.7b**).
- ◆ Press the breast tissue firmly against the ribcage as you complete each spiral and gradually move your fingers toward the areola. Continue this until you have examined every part of the breast. Note any lumps or tenderness.

**Figures 6.7a and 6.7b: Spiral technique of breast examination**

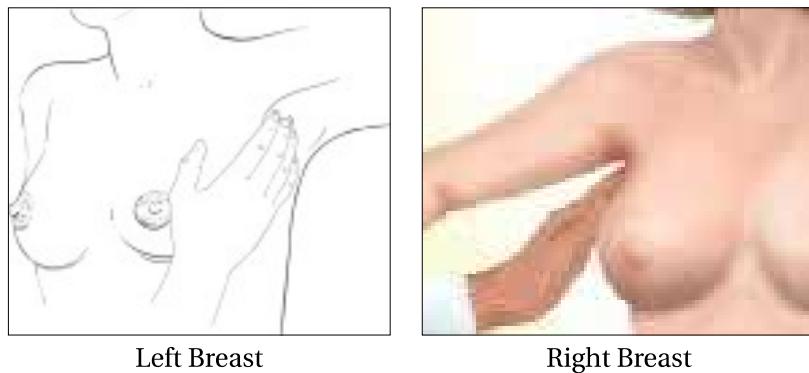


- ◆ Using the thumb and index finger, **gently** squeeze the nipple of the breast (**Figure 6.8**).
- ◆ Note any discharge: clear, cloudy or bloody. Any cloudy or bloody discharge expressed from the nipple should be noted in the woman's record.
- ◆ Although it is normal to have some cloudy discharge from either or both breasts up to a year after giving birth or stopping breastfeeding, rarely it may be due to cancer, infection or a benign tumor or cyst.
- ◆ Repeat these steps for the right breast.
- ◆ If there is any doubt about your findings (e.g., whether there is a lump) repeat the steps with the woman in a sitting position with her arms at her sides.
- ◆ To palpate the tail of the breast, have the woman sit up and raise her left arm to shoulder level. If needed, have her rest her hand on your shoulder. Press along the outside edge of the pectoral muscle while gradually moving your fingers up into the axilla to check for enlarged lymph nodes or tenderness (**Figure 6.9**). It is essential to include the tail of the breast in the palpation because this is where most cancer occurs.
- ◆ Note any discharge from the nipple(s), colour of the discharge, swelling/ lumps, consistency of the lumps, swelling in the armpit (axillary area), above the collar bone (supraclavicular area) and root of the neck (infraclavicular area).
- ◆ Repeat this step for the right side.
- ◆ After completing the examination, have the woman dress herself. Explain any abnormal findings and what, if anything, needs to be done. If the examination is

**Figure 6.8: Checking for Nipple Discharge (Left Breast)**



**Figure 6.9: Checking the Axilla**



entirely normal, tell her everything is normal and healthy and when she should return for a repeat examination (i.e., once in five years or if she finds any changes on breast self-examination).

- ♦ The optimal time for a CBE in a premenopausal woman is 5-10 days after the onset of menses, avoiding the week before the period is preferable. Postmenopausal women may have CBE performed at any time. On average, the time required to perform a CBE ranges is 6 to 8 minutes.

#### **Interpretation:**

The results of CBE will be interpreted in the following ways:

- ♦ **Normal/negative:** No abnormality on visual inspection or palpation
- ♦ **Abnormal:** Definite asymmetric finding on either visual inspection or palpation. Presence of lump(s) in the breast, any swellings in the armpit, recent nipple retraction or distortion, skin dimpling or retraction, ulceration, any nipple discharge

#### **Documentation:**

- ♦ Properly document the findings in the screening form with date of next follow up & hand over to the women
- ♦ Maintain record in register

After performing the breast examination, write the findings in the woman's record. An example of the findings from a normal examination is shown below.

Breasts	Appeared normal. No nipple discharge. No lumps or tenderness found during palpation. Axilla normal.
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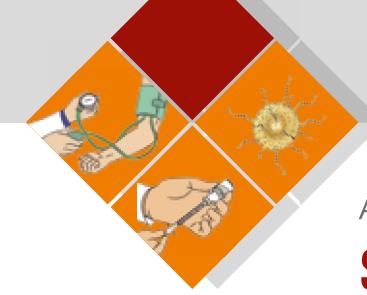
#### **Terms Used to Describe the Findings**

Specific terms used to describe the findings are listed below. When recording the findings, use as many of these terms as possible so that the woman's record will have enough detail.

Shape	Is there any difference in the shape of the breasts?
-------	--

Skin	What does the skin look like? Is it smooth, puckered or dimpled?
------	--

Nipple Discharge	Is there any abnormal fluid coming from the nipples? Discharge is described by its color, thickness, odor and amount.
Mass or Lump	A group of cells that adhere to each other, maybe the result of an abscess, cyst, or benign or malignant tumor.
Size	How big (cm) is the mass? If the mass is round, what is the diameter?
Consistency	What does the mass or lump feel like? Is it firm, soft, fluid-filled or hardened?
Mobility	When palpated, is the mass movable or does it stay fixed? Mobility is usually defined in terms such as fixed (does not move on palpation), freely mobile (mobility on palpation) and limited mobility (some movement on palpation).



## Annexure 7

# Steps of Oral Visual Examination (OVE)

### Tools

- ◆ Wooden spatula/ Mouth Mirror
- ◆ Gloves
- ◆ Torch

### Important point to keep in mind

Mouth mirrors (if available) need to be sterilized after every use i.e, after examining every person.

Disposable gloves should be used while doing the oral visual examination. Fresh gloves should be put on immediately before the examination and must be removed and discarded immediately after examination of one person is completed.

A fresh, clean wooden spatula (stick) must be used for each individual while conducting the oral examination.

The same pair of gloves and wooden spatula (stick) must not be used for more than one patient. The wooden blade after use should be destroyed by breaking the blade. The broken wooden blade and used gloves should be disposed according to the bio-medical waste management norms.

### Process steps

1. Look for any swelling, growth, ulcerations, scars, sinus, fistula over face and neck region on the outer side.
2. Examine the border of both the lips (lip-line) with lips closed and also with mouth slightly open
3. If the person is wearing complete or partial denture, ask her/him to remove it and open her/his mouth wide open
4. Ask the person to rinse the mouth properly with water before starting the examination
5. Take help from any volunteer to hold the torch while you are conducting the oral examination.
6. Mouth Opening – Ask the person to open the mouth widely (as much as the person can open comfortably without any pain). Ask the person to insert three fingers together (index, middle and ring fingers) in the mouth and assess the extent of mouth opening.

- ♦ Hold the wooden spatula (stick) / mouth mirror in pen grip.

- ♦ **Cheek (Buccal Mucosa)**

**Right side**

- i. Use a torch for examination.
- ii. Use the wooden spatula (stick) / mouth mirror in left hand to press the upper part of the cheek outwards just below the gum and use - wooden spatula (stick) / mouth mirror in right hand to press the lower part of cheek next to lower gum.
- iii. Hold your left hand still and slide the - wooden spatula (stick) / mouth mirror in the right hand to the right side on the lower corners of the mouth.



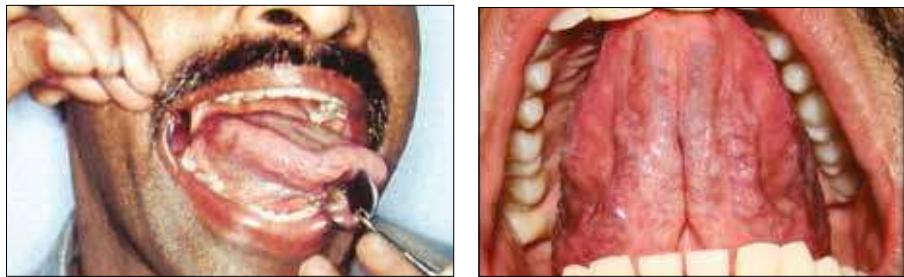
**Left side**

- iv. To examine the left side of the cheek, follow the same steps, by bringing your left hand over the head of the person. Hold your left hand still and move the right hand to the left side on the lower corners of the mouth.
- v. Stand slightly in front of the person. Use the wooden spatula (stick) / mouth mirror at the upper corners of the mouth and gently pull upper lip outward and upward. Repeat the same step to pull the lower lip outward and downward



**9. Tongue and floor of the mouth**

- i. Ask patient to protrude (stick out the tongue) the tongue and examine upper surface of the tongue.
- ii. Use - wooden spatula (stick) / mouth mirror to depress the front side of tongue to see the back of the tongue.
- iii. Retract (pull back) right corner of mouth and ask patient to touch tip of tongue to left corner of mouth. Now examine right side of the tongue.
- vi. To examine the left side of tongue, retract (pull back) left corner of mouth and ask patient to touch tip of tongue to right corner of mouth.



- v. Use - wooden spatula (stick)/mouth mirror to support/stabilize the tongue, if needed.
- vi. Ask patient to lift the tongue upwards and try to touch to palate to examine the lower surface of tongue and floor of mouth

#### 10. Palate (Roof of mouth)

Tilt the head of patient slightly backwards and upwards. Retract corners of the mouth by mouth mirrors/ wooden spatula (stick) and examine the palate (roof of the mouth).



#### 11. Tempo Mandibular Joint

Stand behind the person and place your fingertips over the joints connecting jaw to skull on both sides. Ask the patient to open and close your mouth slowly, multiple times to check for any irregularity such as clicking sound or difficulty in mouth opening. Check for any tenderness, swelling or redness

#### 12. Palpation –

Use your index finger to palpate all parts of the oral cavity to assess if there is abnormality such as any lesion, hardening, swelling etc. You can do this by moving your finger from one side of the cheek to the other, over the entire surface of tongue (sides, upper part and lower part of tongue), over the roof and floor of the mouth.



