



**National Programme for
Prevention and Control of
Diabetes, Cardiovascular Diseases and Stroke**

**A Guide for
Health Workers**



Directorate General of Health Services
Ministry of Health and Family Welfare
Government of India
New Delhi
April 2009



National Programme for Prevention and Control of Diabetes, Cardiovascular Diseases and Stroke



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May 2009**

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Fitness is Essential for Survival

Do You Know

- * High blood pressure is a silent killer
- * By 2020 there would be **about** 4.8 million deaths due to cardio vascular diseases in India
- * By 2025 India would **have** with largest number of **diabetics in world**
- * Tobacco kills 8-9 lakhs people each year in India (**Nearly 2200 persons per day**)
- * One fourth of adult population & **one fifth of school children** are overweight in India
- * **Overweight & obesity are emerging as major public health problems**



Contents

Acknowledgment

Preface

Section One:	Introduction and Background	1
Section Two:	Prevention of Non Communicable Diseases	5
Section Three:	Role of Health Workers	25
Section Four :	How to use this Guide	26
Annexure		
	1 – Common Definitions	33
	2 – How to measure Blood Pressure	35
References		36

Flip Charts

This Toolkit has a separate booklet containing

Flip Charts on following themes:

- 1 – Healthy Diet
- 2 – Physical Activity
- 3 – Tobacco Use
- 4 – Alcohol
- 5 – Diabetes
- 6 – Blood Pressure
- 7 – Heart Attack
- 8 – Stroke

Foreword

While we continue to battle with health related to child and maternal health, HIV/AIDS and other communicable diseases, Non-communicable diseases are posing a serious public health threat today. An increasing burden of Cardiovascular Diseases (CVDs), Diabetes Mellitus, Cancer, Stroke and Chronic Lung Diseases, due to changing life-styles calls for an urgent action and focus on developing health promotion and prevention strategies.

The framework of implementation for NRHM (2005-2012) has also identified some of the major constraints towards preventive and promotive health. To address these constraints, National Programme for Prevention and Control of Diabetes, Cardiovascular diseases and Stroke (NPDCS) has been initiated. The focus of the intervention in this programme is on healthy life style such as increase intake of fresh fruits and vegetables reduce salt consumption, increasing physical activity, avoidance of tobacco and alcohol use.

This document has specially been designed to build the capacity of the health personnel for promoting healthy lifestyle in the community. I am confident that this publication would serve as an important guide and tool towards health promotion and control of non-communicable diseases.

Dr. R.K. Srivastava
Director General
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Government of India

Section One

National Programme for Prevention and Control of Diabetes, Cardiovascular diseases and Stroke (NPDCS)

Introduction and Background

Non-communicable diseases (NCDs) include diseases, which are not infectious. Such diseases mainly result from lifestyle related factors such as unhealthy diet, lack of physical activity, tobacco use etc. Changes in lifestyles, behavioural patterns, demographic profile (ageing population), socio-cultural and technological advancements are leading to sharp increase in the prevalence of Non-Communicable Diseases like Diabetes, Cardiovascular diseases, Stroke, Cancer etc. These diseases by and large can be prevented by making simple changes in the way people live their lives or simply by changing their lifestyle.

Many people, these days, are suffering and loosing their lives from NCDs. One of the most serious concerns is that it affects people in their most productive years of life. It is therefore, vital that increasing importance of chronic diseases is anticipated and acted upon urgently. NCDs have emerged as a major public health problem in recent years, and it is estimated that in 2005, these chronic diseases accounted for 53 percent of all deaths in India². As a first step, it is essential to communicate the latest and most accurate knowledge and information to front-line health professionals and public at large.



Keeping the increasing disease burden of Non-Communicable Diseases, Ministry of Health and Family Welfare, Government of India, launched the National Programme for Prevention and Control of Diabetes, Cardiovascular diseases and Stroke (NPDCS) on 4th January, 2008 on a pilot basis in ten districts in ten states.



Objectives of the Programme:

The pilot phase has been planned with the objectives of providing effective promotion, prevention and control strategies to provide for an integrated action plan for these chronic diseases. The programme activities have been grouped into the following three main components:

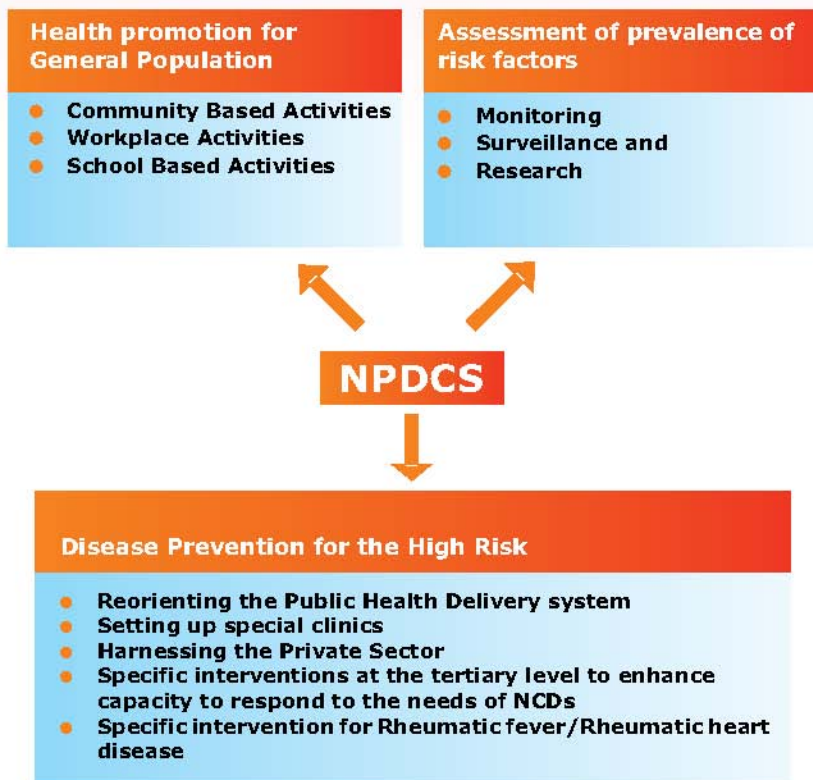
i. Health promotion for general population

ii. Disease Prevention for the high risk

iii. Assessment of prevalence of risk factors



Activities Undertaken in National Programme on Prevention and Control of Diabetes, Cardiovascular Diseases and Stroke (NPDCS)



Section Two

Prevention of Non Communicable Diseases (NCDs)

Health promotion is targeted for healthy, risk free population. Health promotion activities are focused on reducing the risk factors like

1. Promotion of Healthy Diet

- Unhealthy diet consists of:
 - High intake of salt and oily food
 - Low intake of vegetables and fruits
 - Excess intake of fast foods

2. Promotion of physical activity

3. Tobacco use

4. Alcohol intake

5. Stress

Other activities in the programme include early diagnosis and appropriate management for reducing morbidity and mortality for people who suffer from diseases/elevated risks like hypertension, obesity, high blood lipids, raised blood glucose levels and any other symptoms like paralysis, etc.

Risk reduction strategies for prevention of these cannot be dealt in isolation. A multi-sectoral, multi disciplinary and integrated approach is needed for management of Diabetes, Cardiovascular diseases and Stroke.



1. Promotion of Healthy Diet

Suggest to adopt healthy options as below:

- Fresh vegetables and fruits
- Fresh lime, butter milk, coconut water, fresh juice, vegetable soup
- Roasted legumes, chana and nuts
- Upma and poha with vegetables
- Besan cheela and vegetable stuffed idlies
- Whole wheat bread, vegetable sandwich, Sprout chat and dal

Unhealthy diet⁴ consists of

- High intake of salt and oily food
- Low intake of vegetables and fruits
- Excess intake of fast / processed foods

Avoid excessive intake of

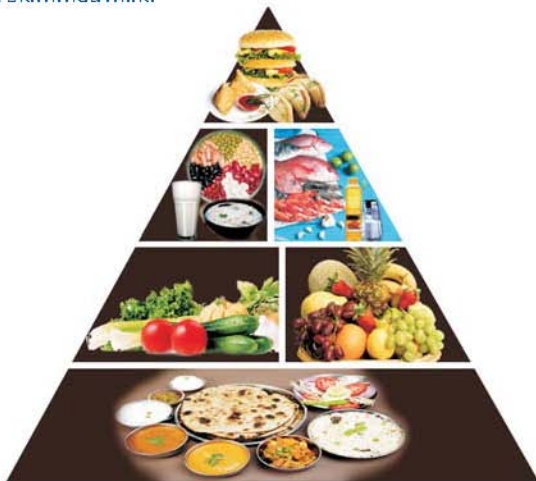
- Aerated drinks
- Chips and potato fingers
- Burgers
- Candies and chocolates
- Pizza, Samosa and bread pakora



Given below are key components, which should be emphasized during your community visits and interaction.

What to eat and how much?³

- Eat a minimum of 450-500 gms of a variety of seasonal, locally available fresh fruits and vegetables every day (2 to 3 *katories*/bowls of vegetables and 1 to 2 fruits)
- Eat whole grains, whole wheat roti, whole pulses and partially polished rice instead of fully polished rice
- Try and eat home made fresh meals rather than packeted food
- Eat small quantity of nuts everyday
- Switch from solid to liquid fats. Include a small quantity of mustard oil in your diet
- In case you are a non-vegetarian include 2-3 portions of fish per week
- Try not to add extra salt to food, and limit foods which are high in salt.
- Drink 1-2 glasses of skimmed milk everyday or eat curd made from skimmed milk.



2. Promotion of Physical Activity

Physical activity is an important way of burning excess calories and to remain fit.

Exercise is important:

- To remain fit as it increases resistance to disease
- To prevent heart disease, diabetes, etc.
- To look good as it improves self-image
- To counter anxiety and depression
- To have a sound sleep
- To lower cholesterol
- To control body weight and fat distribution

During your interaction with the community, encourage them to find time for exercise at home, at work or during leisure. Encourage to undertake regular (moderate to vigorous) exercise for 5-7 days per week.



MAKE EXERCISE A PART OF YOUR DAILY ROUTINE



Advise them to start slowly and work-up gradually⁴ as given below:

- At least 30 minutes (accumulated) of physical activity per day for protection of cardiovascular diseases and diabetes.
- 45 minutes/ day (accumulated) for fitness
- 60 minutes/ day (accumulated) for weight reduction

Give some examples of easy, simple and comfortable exercises such as

- Brisk walk
- Cycling
- Jogging
- Swimming
- Dancing
- Playing games/sports, playing with children
- Yogasanas
- Gardening and household chores gardening, washing, mopping etc.



3. Tobacco Use

Single largest preventable cause of deaths and disease

Tobacco kills 8-9 lakh people each year in India. The number is likely to increase many fold in the next 20 years. It is used in various forms, which include cigarette, bidi, hukka, gutkha, zarda, khaini etc.

- Tobacco smoke contains over 4000 harmful and poisonous chemicals such as nicotine, tar, carbon monoxide etc.
- Tobacco in any form is injurious to health.
- Passive smoking is equally harmful.

Hazards of Tobacco

- Damages almost every organ
- Causes cancers of mouth, throat, lungs, larynx (voice box) and oesophagus (food pipe)
- Causes heart attacks, chronic bronchitis, impotence in men and sterility in women
- Leads to still born or underweight babies
- May lead to loss of vision
- Initiates fast ageing



Do you know 4000 poisonous substances in tobacco can cause

- Hair loss
- Cataract
- Tooth decay
- Lung Cancer
- Heart disease
- Stomach ulcers
- Discoloured fingers
- Deformed sperm
- Gangrene

... and a painful death

TOBACCO USE CAUSES DEADLY CANCER



Quitting tobacco has major and immediate health benefits for all ages⁵

On Stopping Tobacco Within	What Happens
20 minutes	B.P., pulse rate & body temperature returns to normal
8 hours	The carbon monoxide level in blood drops to normal & oxygen level increases to normal
24 hours	Your chances of heart attack decrease
48 hours	Ability to smell & taste is enhanced
72 hours	Lung capacity increases, breathing becomes easier
2 weeks to 3 months	Circulation improves, walking is easier
1-9 months	Ability to clear lungs and reduce infections increase, coughing, fatigue & shortness of breath decreases & body's energy level increases
5 years	Lung Cancer death risk decreases by 50%
10 years	Lung Cancer death risk drops to the level of a non-smoker



TOBACCO CONTRIBUTES TO 56.4% AND 44.9% OF CANCERS IN MEN AND WOMEN

4. Alcohol

ALCOHOLISM ... A SOCIAL EVIL

Alcohol use:

- Leads to liver and heart diseases
- Increases the risk of accidents and untimely death
- Affects family, society
- Main reason for domestic violence / other forms of violence

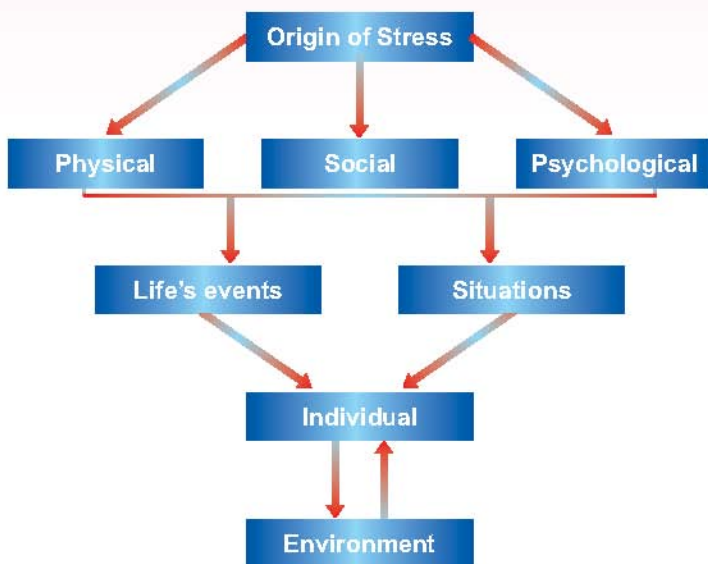
Don't use alcohol to relieve stress

- Say no to alcohol
- Say no to social drinking



5. Stress Management

Stress is not a mental illness, but a state of mind. It is a reaction of the body (physical or mental) towards any known situation. As a negative influence, it can result in feelings of disruption, rejection, anger, and depression, which in turn can lead to health problems such as headache, stomach upset, rashes, insomnia, ulcers, high blood pressure, heart disease, and stroke.



Coping with stress

Encourage community members to adopt following strategies for coping with stress

- Relaxation exercises
- Practicing yoga and meditation
- Acquiring problem solving skills
- Developing hobbies (listening to music)
- Positive thinking
- Social support
- Physical activity
- Organize work/activities in daily life



6. Diabetes

Symptoms of polyuria (excessive urination), polydipsia (excessive thirst), polyphagia (excessive hunger) with causal blood sugar level of $\geq 200\text{mg/dl}$ or Fasting plasma sugar $\geq 126\text{ mg/dl}$ or 2 hour post prandial (75g glucose) $\geq 200\text{mg/dl}$.

Encourage following strategies for prevention and control of diabetes:

- Maintain normal body weight (Annexure I)
- Healthy nutritional practices
- Regular physical exercise such as brisk walking/jogging
- Avoiding alcohol and smoking
- Control of diabetes and its complications is possible by maintaining:
 - Normal blood glucose levels
 - Ideal body weight and blood pressure
 - Normal blood cholesterol and fats
- All diabetic persons should regularly get their blood glucose estimation, kidney function test, eye check up and foot examination



Diet and diabetes

- 30% of the disease can be controlled with proper diet
- Diet for a diabetic person need not be completely different from a non-diabetic person
- Vegetables should be taken more often like Bittergourd, Lettuce leaves, Brinjals, Ladies finger, Cabbage, Cauliflower, Carrot, Soya beans, Drumstick
- Cook the vegetables with minimum oil
- The foods that a diabetic patient should avoid are
 - Sugar in any form - Sweets, ice creams, Chocolates, Candies etc.
 - High carbohydrate foods like Potatoes, Sweet potatoes etc.
 - Fried items like Puri and Chat items
 - Fruits high in sugar content like Banana, Grapes, Mango etc.

Exercise for a Diabetic patient is very important as it:

- lowers blood glucose levels quickly;
- improves the ability of the human body to use insulin;
- reduces insulin requirement;
- better control of diabetes; and
- reduces the risk of heart diseases.



**IT IS NOT ONLY IMPORTANT TO KNOW WHAT YOU EAT,
BUT ALSO HOW MUCH YOU EAT.**

7. High Blood Pressure

Symptoms: High blood pressure (hypertension) is defined as systolic blood pressure ≥ 140 mmHg and diastolic blood pressure ≥ 90 mmHg on 2 occasions.

Most often hypertension does not present with any symptom, it is an incidental finding during routine medical check-ups. This emphasizes the need for screening for hypertension. Some may also present with continuous headache, giddiness, tingling sounds in ears etc. The recent Joint National Committee (JNC) VII classification⁷ is as follows-

Blood Pressure Classification	Systolic Blood Pressure (mmHg)	Diastolic blood pressure (mmHg)
Normal	<120	An < 80
Prehypertensive	120-139	or 80-89
Stage 1 Hypertension	140-159	or 90-99
Stage 2 Hypertension	≥ 160	or ≥ 100

People with high blood pressure usually ask what more can be done to reduce their blood pressure levels. You can give following supplementary information.

Reduce	Avoid	Increase
★ Weight	★ Alcohol	★ Fruits
★ Salt	★ Smoking	★ Vegetables
★ Stress		

How to reduce weight?

- Limit serving size
- Regularize eating habits
- Take food at regular intervals of time
- Eat only when you are feeling hungry
- Do not skip meal

Tips for reducing salt

- Avoid adding extra salt to food
- Avoid high salt content food such as pickles, chutney, sauces, pappad, etc.

Encourage patients with high blood pressure to take medicines regularly and not to stop or change dosage or medicines without medical advice.



8. Heart Attack

Heart Attack is defined as Severe Chest pain > 30 minutes, radiating to left arm not relieved by painkillers, nausea, vomiting, sweating etc.

- Heart pumps blood through blood vessels to supply oxygen to all parts of the body.
- Oxygen is the fuel for the energy needs of the body.
- When an artery in the heart gets blocked, it can lead to a heart attack.
- An artery gets blocked when there is a progressive deposition (cholesterol) in the vessel wall and growth of plaque or formation of clot, which stops forward blood flow

Warning signs of Heart Attack²

- Pain, pressure or constriction in the centre of the chest for more than 30 minutes
- Nausea, swelling, or feeling faint
- Pain in the jaw, neck, arms, shoulders or back
- Shortness of breath



DON'T HESITATE TO SEEK MEDICAL HELP

9. Stroke

Stroke is defined as paralysis or numbness of one side of body, difficulty in speech, hearing, reading or writing.

- It is due to disruption of blood supply to an area of the brain
- Blood supply may be stopped due to a blood clot/break in the blood vessel

It is an emergency; refer to nearest health facility within one hour (golden period)

Risk factors for Stroke

Major factors

- High Blood Pressure
- Diabetes
- Heart Diseases
- Smoking
- Alcohol

Secondary factors

- Increased serum cholesterol
- Physical inactivity
- Obesity

Warning Signs of Stroke^a

- Sudden weakness, paralysis or numbness of the face, arm & leg on one or both sides of the body.
- Loss of speech, or difficulty in speaking or understanding speech.
- Dimness or loss of vision, particularly in only one eye.
- Unexplained dizziness (especially when associated with other neurological symptoms), unsteadiness, or sudden fall.
- Sudden severe headache &/or loss of consciousness.

LEARN TO RECOGNIZE STROKE

REACT TO STROKE ON TIME

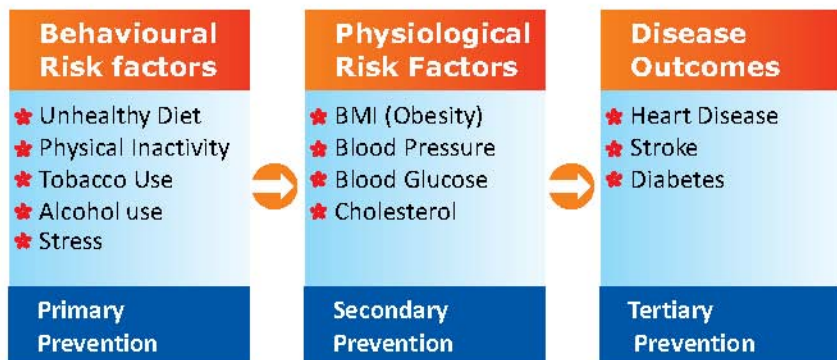
LIFESTYLE CHANGES MAY PREVENT A STROKE



10. Conclusion

To sum up, non-communicable diseases (Diabetes, Cardiovascular Diseases and Stroke) are linked to common risk factors, such as, unhealthy diet, physical inactivity, tobacco, alcohol and stress. Development of these diseases and risk factors associated with them can be prevented if healthy lifestyle is adopted. Therefore, it is important that people are educated about the risk factors and how to prevent their occurrence.

Risk factors for Diabetes, CVDs and Stroke and their Prevention



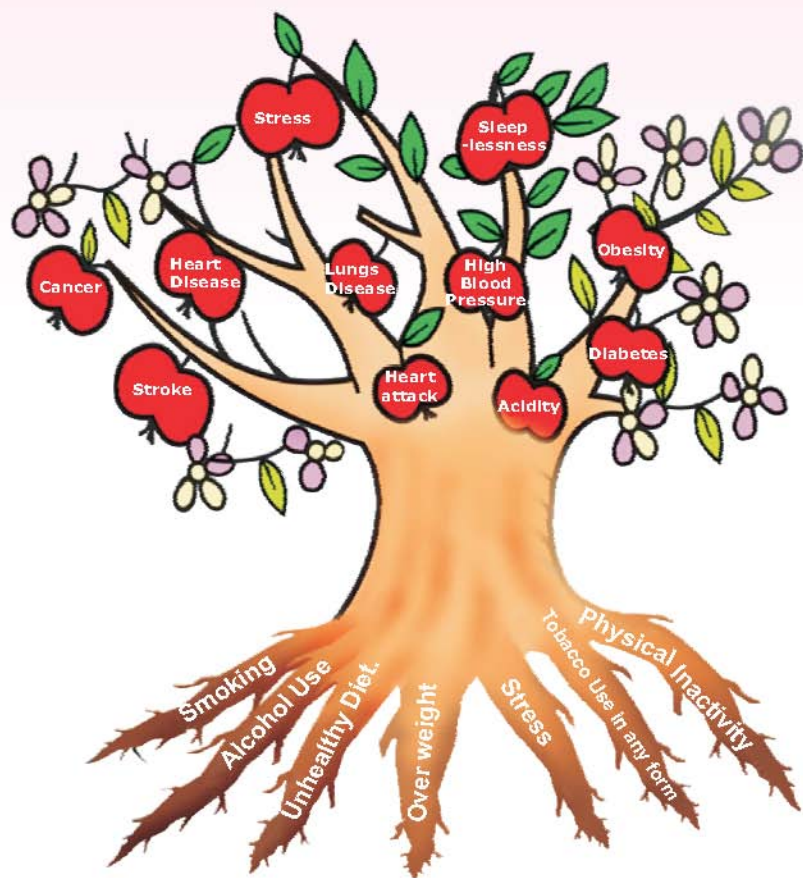
There is strong evidence that significant reduction can be achieved by introduction of simple public health interventions addressing major risk factors such as unhealthy diet, physical inactivity and use of tobacco in any form for diabetes, CVDs and Stroke.

Health system needs to be oriented to this fact that clinical treatment provides solutions at an individual level and only after the disease has developed. Public health measures such as providing information and education help to avert the disease itself and benefit and protect the entire population. Different stakeholders, therefore, need to be oriented towards various prevention methods and approaches to reduce the burden of these diseases.

Risk behaviours and factors are usually established in childhood and/or during the adolescence and may pass on to adulthood. It is important that primary prevention strategies should be targetted particularly at children, and preferably involve school based health education programmes. The intervention in School Health Programmes should aim at promoting healthy diets, exercise and avoiding the use of tobacco. These primary prevention strategies must be underpinned and complemented by policies of primordial prevention like availability of fresh fruits and vegetables in near by areas, facilities for physical activity / exercise and making the village or city smoke free etc.



Fruits of Unhealthy Lifestyle



**Hit on the root,
branches will fall down automatically**

Healthy habits, Healthy life, Healthy India



Healthy Behaviour



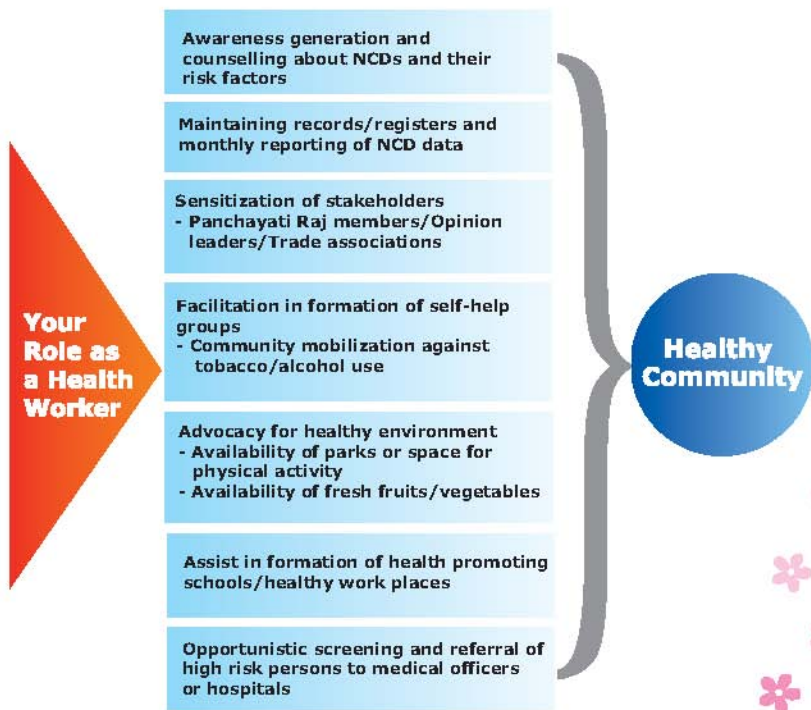
Unhealthy Behaviour



Section Three

Role of Health Workers

As caretaker of health of the community, your role is to help and motivate community to remain healthy and to provide information on healthy habits. As health worker, reinforce messages regularly which help in prevention of diseases related with unhealthy life styles (e.g., Unhealthy diet, physical inactivity, tobacco use, alcohol intake, stress). One of your main responsibility is to communicate that **"Prevention is the best approach"**.



Section Four

How to use this Guide


This guide has been developed as a tool for implementation by the health personnel towards prevention and control of non-communicable diseases. You can use the information in the guide for interaction with the community during your field visits and in the health centre. In fact, any opportunity that you have for interaction with a person or family, an appropriate message can be provided to them.

This section describes

1. Opportunities to interact with the client
2. Myths related to these chronic diseases
3. Practical tips on Counselling
4. Use of Flip Charts

1. Opportunities to interact with the client

The following matrix shows different opportunities that one may have to interact with the community. Depending on the client, you can focus your discussion on corresponding themes.

Type of workers	Opportunity	Target population	Focus of Discussion
ANM/ LHV/ FHWs Multi purpose male workers	Sub-center clinics	Adult males, Females Adolescents ,	 Healthy diet Physical activity Tobacco use in any form Alcohol intake Stress
	Antenatal Checkups	Pregnant Women	
	Immunization clinics	Mothers	
	Anganwadi monthly meetings/ village health days	Mothers/community	
	During field visit	Mothers, Adolescent girls & Adult males	
	During field visits	Adult males	
	Group meetings	Adolescents	
ASHA	Field visits	Pregnant women, mothers, adolescents, community	
	Group meetings, Camps & Health days	Community	

2. Common Myths and beliefs ²

People usually have some myths and beliefs related to onset of diseases. Therefore, it is important that you are aware of some of the most common myths about these chronic non-communicable diseases, so that when you are interacting with community, you can answer effectively. Some of these myths are given below:

	Myths	Facts
1.	Chronic diseases mainly affect high income countries	Four out of five chronic disease deaths are in low and middle income countries
2.	Low and middle income countries should control infectious disease before chronic diseases	Low and middle income countries are at the center of both old and new public health challenges
3.	Chronic diseases mainly affect rich people	Poor people are much more likely to develop chronic disease and more likely to die as a result
4.	Chronic diseases mainly affect old people	Half of chronic disease deaths occur prematurely in people under 70 years of age
5.	Chronic diseases affect primarily men	Chronic diseases, including heart disease affect women and men almost equally
6.	Chronic diseases can't be prevented	Major causes of chronic diseases are known, and if risk factors are eliminated 80% of all heart disease, stroke and type 2 diabetes would be prevented
7.	Chronic disease prevention and control is too expensive	Simple and Cost effective interventions are available
8.	My grand father smoked and was overweight – and he lived upto 96	In any population there will be a certain number of people who do not demonstrate the typical patterns seen in the vast majority

3. Practical tips on counselling

- Use appropriate material for different age groups.
- Provide suggestions that should be acceptable and in accordance with the cultural practices of the community.
- The messages should not be given as medical prescriptions.
- Before starting a conversation, please consider the context in which the person/family is living.
- All messages are not appropriate for all persons.

Adopt 'GATHER' technique for counselling

GATHER stands for

- G - Greet** the client
- A - Ask** the client about their problems and what they feel about these conditions
- T - Tell** the clients about NCDs and different risk factors responsible for developing these diseases. Discuss various options/ methods you have for reducing the risk factors associated with NCDs
- H - Help** them to understand the problem
- E - Explain** clearly what they need to do in physical activity, how to adopt healthy diet and how to stop tobacco and alcohol use
- R - Return** for follow up. Discuss about the follow up schedule with the client and explain the importance of follow up.



Keep in mind that during counseling session you have empathy

- * **Offer practical suggestions.** Suggest measures that they can take within the given facilities/means. Your suggestions should not contradict any cultural norms. (Eg. Don't suggest going to Gym, or buy apples every day, instead help them to use locally available seasonal fruits). Similarly, for physical activity, if the person is a daily wage labourer, your advice should focus on other risk factors like consuming healthy diet, smoking and alcohol cessation etc.
- * Don't look down on people who are tobacco users, fat or those who consume alcohol. Try not to accuse them in the context of their life style and working environment.

Remember

- * **Sustained and frequent efforts are needed on your part to educate clients**
- * **As most of the risk factors originate in home, whole of the family needs to be sensitized**
- * **Behavior change is a time consuming process. As these diseases/risk factors are linked to the unhealthy habits, don't expect miracles in a short span of time.**
- * **Traders, local shops, Mahila Mandals, School teachers, Panchayati Raj Leaders also need to be sensitized regarding risk factors related to NCDs.**

Counseling is an integral and essential part of your community visits. The people in the community accept or reject your advice depending upon how efficiently you counsel them.

4. Use of Flip Charts

This toolkit has flip charts which show real situations people usually face in their lives. You can show the pictures in the flipchart to the community and initiate discussion.

The people usually listen to the advise and incorporate in their behaviour if they relate with the topic or situation. Therefore you may build up your discussion by stating any real life case from your experience which you feel that the community people would identify easily.

Depending upon the availability of time and resources you can start discussion on any one theme or all the following themes:

- Healthy Diet
- Physical Activity
- Tobacco Use
- Alcohol
- Diabetes
- Blood Pressure
- Heart Attack
- Stroke



Using Case Studies as basis for discussion

Given below are some cases, which you would have observed in real life situations. You may start discussion with the community on themes as below using these as hypothetical situations.

Case Studies

1. Healthy Diet

Shyam, a 10 year old school going boy weighing 35 kg and height of 128 cm, loves to eat tikki, chat, potato chips. His mother complains that he doesn't take vegetables and pulses. Identify the unhealthy behaviour of Shyam?

2. Physical Activity

Ram, a 15 year old boy, who is obese and prefers to sit ideal in home most of the time. He doesn't like to play with his friends as they tease him because of his size.

3. Tobacco

Prakash, a 40 year old farmer, smokes bidi for last 20 years. Of late he has been feeling tired & irritable. Identify the problem and what should you do for Prakash?

4. Diabetes

Shanti Devi, a 45 year old female, presents with complaints of excessive tiredness, increased urination, excessive thirst and hunger. The blood test for fasting sugar reads 156 mg/dl. Her blood pressure reading is 120/80 mmHg. Identify the problem and what you should do for Shanti Devi?

**YOU ARE THE KEY FOR SUCCESS OF THE PROGRAM &
HEALTHY COMMUNITY**

Case Studies

- 5. Blood Pressure** Santosh, a 40 year old male, complains of continuous headache. His blood pressure reading is 160/90 mmHg. Identify the problem and what should you do for Santosh?
- 6. Heart Attack** Ramu, 50 year old male complained of chest pain which was not relieved by painkillers. Identify the problem in Ramu?
- 7. Stroke** Ramesh, 55 year old male visited the PHC and informs about his inability to move his left hand side. He also has difficulty while speaking. The medical officer has diagnosed him to be suffering from stroke. Do you have such cases in your village? What would you do for such people?



Annexure 1

Common Definitions

Cardiovascular Disease (CVD) includes dysfunctional conditions of the heart, arteries and veins that supply oxygen to vital life-sustaining areas of the body like the brain, heart itself and other vital organs.

Angina	Chest pain on exertion, which relieves on rest, radiates to neck, shoulder, arm and back, feeling of constriction in chest.
Diabetes	Symptoms of polyuria (excessive urination), polydypsia (excessive thirst), polyphagia (excessive hunger) with causal blood sugar level of $>200\text{mg/dl}$ or Fasting plasma sugar $>126\text{ mg/dl}$ or 2 hour post prandial (75g glucose $>200\text{mg/dl}$.
Heart Attack	Severe Chest pain > 30 minutes. Radiating to left arm not relieved by painkillers; nausea, vomiting, sweating etc.
Hypertension	Hypertension is defined as systolic blood pressure $>140\text{ mmHg}$ and diastolic blood pressure $>90\text{ mmHg}$ on 2 occasions. Most often hypertension does not present with any symptom, it is an incidental finding during routine medical check-ups. This emphasizes the need for screening for hypertension. Some may also present with continuous headache, giddiness, tingling sounds in ears etc.
Stroke	Paralysis or numbness of one side of body, difficulty in speech, hearing, reading or writing.

Body Mass
Index (BMI)

Body Weight (in kilograms)/Height (in
meters)²

BMI	Category
<18 kg/m ²	Underweight
18-23 kg/m ²	Ideal body weight
23-25 kg/m ²	Overweight
>25 kg/m ²	Obese

Waist
circumference

Waist circumference is an indirect measure of abdominal fat in the body. Waist can be measured using a non stretchable fibre measure tape. The participants have to stand erect in a relaxed position with both feet together.

	Ideal Waist circumference
Male	<90 cm
Female	<80 cm



Annexure 2

How to measure Blood Pressure

- Blood pressure can be measured by sitting on a chair with back straight or lying down position.
- The patient should be seated for at least 5 minutes, in a relaxed manner. He should not be moving or speaking.
- The arm must be supported at the level of the heart. Ensure no tight clothing constricts the arm.
- Place the cuff at least 80% of the arm (but not more than 100%) on the upper left portion of arm neatly with the centre of the bladder over the brachial artery. The bladder should encircle.
- The column of mercury must be vertical, and at the observers eye level.
- Estimate the systolic pressure by palpatory method:
 - Palpate the radial / brachial artery
 - Inflate cuff until pulsation disappears
 - Deflate cuff
 - Estimate systolic pressure
- Then inflate to 30mmHg above the estimated systolic level needed to occlude the pulse.
- Place the stethoscope diaphragm over the brachial artery and deflate at a rate of 2-3mmHg/sec. until you hear regular tapping sounds.
- As you deflate the cuff, you will hear sounds (Korotkoff sounds) of different intensity. The first appearance of faint, repetitive, clear tapping sounds, which gradually increase in intensity, measures the systolic blood pressure. The point at which all sounds finally disappear completely is the diastolic pressure.
- The blood pressure should be recorded as soon as it is measured.

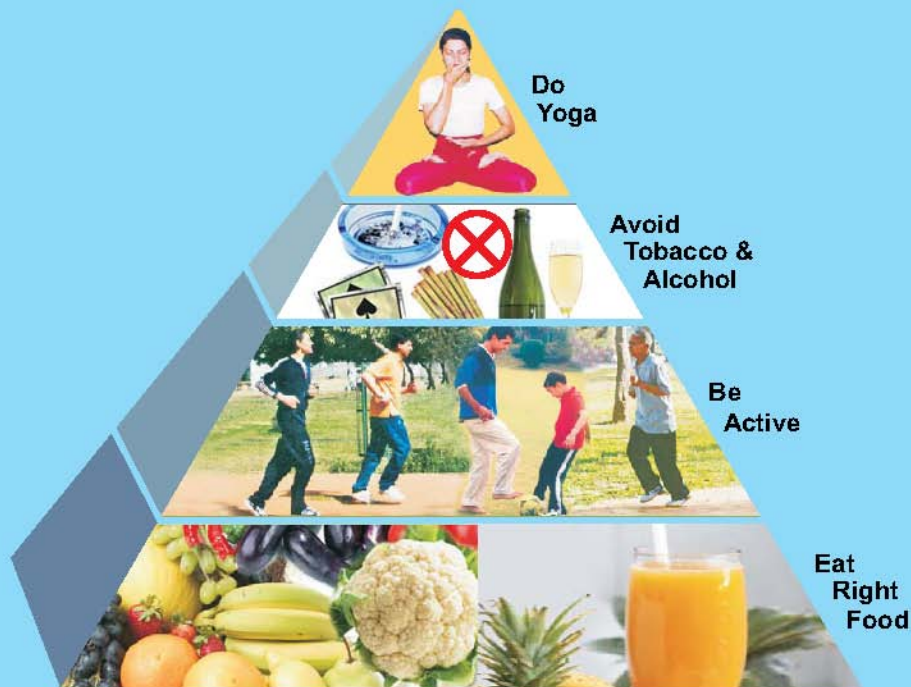
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Burning calories is not easy...

Food	Calories	How to burn it
Slice Pizza 	250 	Bicycling for 1 ½ hours 
Cheese Burger 	330 	Swimming for 1 hour 
Cheese Burger 	300 	Jogging for ½ an hour 
Junk Meal 	700 	Basket ball for 2 hours 
Pastry 	300 	Tennis (singles) for 1.5 hrs. 
Samosa Large 	160 	Brisk walking for 2 km 
Aerated Drink 	080 	Kabaddi for 2 hours 



**Directorate General of Health Services
Ministry of Health and Family Welfare
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