



Ministry of Health & Family Welfare
Government of India



SUPPLEMENTARY MODULE FOR COMMUNITY HEALTH OFFICERS

Management of Non-Communicable Diseases

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FOR COMMUNITY
HEALTH OFFICERS**



**MANAGEMENT OF
NON- COMMUNICABLE
DISEASES**

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Programme for Prevention and Control of Cancer, Diabetes, Cardiovascular Diseases and Stroke (NPCDCS)

In 2010, the Government of India launched the National Programme for Prevention and Control of Cancer, Diabetes, Cardiovascular Diseases and Stroke (NPCDCS) to be implemented in 100 districts of 21 States. The rationale was to provide technical, financial and logistics support to the State Governments, and thereby supplement the efforts put in by the States in prevention and control of common NCDs. NPCDCS has a focus on health promotion, screening and early diagnosis of persons with NCDs and NCD risk factors and their appropriate management.

During the 12th Plan, it was proposed to scale up in a phased manner and cover all districts of the country. In 2013-2014, programme was subsumed under the National Health Mission (NHM) for optimization of scarce resources and provision of seamless services to the patients as also for ensuring long term sustainability of interventions.

Population Based Screening

Under the population-based NCD screening initiative, the Subcentres, including the HWCs-Subcentres, are being strengthened to cater mainly health promotion, screening for NCDs/ NCD risk factors, and referral of suspected cases to facilities where patient management facilities exist, and the Primary Health Centres, including the HWC-PHCs are being strengthened to diagnose and manage uncomplicated NCDs appropriately.

Under this programme all individuals will be enrolled and assessed for risks by ASHAs in the communities. ASHAs will then prioritise individuals at risk and ensure all individuals are screened at Sub-centres. Screening will be done for five common NCDs at Sub-Centres; Hypertension, Diabetes, Oral, Breast and Cervical Cancer screenings. Screenings will be done by ANMs. CHOs will provide supportive supervision to ANMs in screening. Following this, appropriate further actions on individuals

SERVICE DELIVERY UNDER NPCDCS PROGRAMME

SHC-HWC	PHC-HWC	CHC	DH
<ul style="list-style-type: none"> Facilitate ASHAs to conduct risk assessments for NCDs using CBAC Health Promotion Screening of five common NCDs and Referrals of suspected individuals for further management and Follow-up Dispensing medications as prescribed by MO. 	<ul style="list-style-type: none"> Health Promotion Opportunistic screening Manage patients referred through PBS Diagnose and initiate treatment where possible Referral of cases of common NCDs to CHC/DH for complications screening and further management as required. 	<ul style="list-style-type: none"> Health Promotion Opportunistic screening Manage patients referred through PBS from PHCs Diagnose and initiate treatment and manage Referral of cases to DH for further management as required. 	<ul style="list-style-type: none"> Health Promotion Opportunistic screening Manage patients referred through PBS from PHC/CHC Diagnose and initiate treatment where possible Referral of cases of common NCDs to Tertiary centres as required.

Essential knowledge and skills of Community Health Officer for management of NCDs under AB-HWC programme

Service Package No. 07	Activities of CHO	Knowledge	Skills
Management of Non-Communicable Diseases	<ul style="list-style-type: none"> • Screening for five common NCDs and referral of individuals with suspected NCD • Follow up of individuals diagnosed with NCDs and dispensing of medicines as prescribed by MO. • Counselling patients and high risk individuals to adopt healthy life styles • Referral of sick patients to higher facilities and follow up of discharged patients to provide continuum of care • Documentation and reporting to higher levels • Conduct 01 yearly community based NCD survey of all eligible individuals in your area. • Create awareness among general population in your HWC area regarding NCDs • Coordinate IEC activities in the Community 	<ul style="list-style-type: none"> • Epidemiology and basic pathophysiology relevant to common NCDs • Clinical presentations, diagnostic and management protocols regarding common NCDs • Risk factors, causative agents, preventive measures and healthy life styles related to common NCDs • Techniques and interpretation of screening methods for HTN, DM and common cancers 	<p><u>#Clinical Skills:</u></p> <ul style="list-style-type: none"> • Able to take relevant history of patients • Able to conduct physical examination of patients • Perform relevant lab investigations • Provide counselling services for patients • Perform screening for selected diseases including VIA testing, <p><u>#Management Skills:</u></p> <ul style="list-style-type: none"> • Monitor and enhance preventive measures related to NCDs at community level • Able to provide supportive supervision of ASHA and MPWs to undertake outreach/community level services <p><u>#Community Intervention skills:</u></p> <ul style="list-style-type: none"> • Conduct health education sessions and IEC activities for the community • Community mobilisation and provide preventive services

ABBREVIATIONS

BP- Blood Pressure

CHO- Community Health Officer

CHC- Community Health Centre

CVDs – Cardiovascular Diseases

DH- District Hospital

DM- Diabetes Mellitus

ECG- Electrocardiogram

FBS- Fasting Blood Sugar/Glucose levels

HWC- Health and Wellness centre

HTN- Hypertension

MO- Medical Officer

OGTT- Oral Glucose Tolerance Test

PHC- Primary Health Centre

PP2BS- Post-prandial 02 hours Blood Sugar/ Glucose levels

RBS- Random Blood Sugar/Glucose levels

MCR- Micro Cellular Rubber sandals/ chappals/ footwear

HYPERTENSION

Learning Objectives:

After studying this chapter, you should be able to:

- 1) Understand relevant pathophysiology of hypertension and its clinical complications and correlate these changes to assess clinical condition of patient with HTN at HWC level.
- 2) Monitor and follow up on patients with hypertension at HWC level on OPD and emergency basis, based on standard clinical protocols.
- 3) Provide individual and community level education and spread awareness regarding hypertension and its complications.

Introduction:

Hypertension is a chronic, persistent, largely asymptomatic disease. A majority of the patients with hypertension in India are unaware of their condition. This is because of low levels of awareness and the lack of screening for hypertension in adults-either as a systematic programme or as an opportunistic exercise during visits to healthcare providers.

Hypertension is the number one health related risk factor in India, with the largest contribution to burden of disease and mortality. It contributes to an estimated 1.6 million deaths, due to ischemic heart disease and stroke, out of a total of about 10 million deaths annually in India. 57% of deaths related to stroke and 24% of deaths related to coronary heart disease are related to hypertension. Hypertension is one of the commonest non-communicable diseases in India, affecting an about 29.8% of the adult population, relatively more common in urban than rural areas (33.8% versus 27.6%) according to recent estimates. Higher the blood pressure (systolic or diastolic or both) greater is the risk of cardiovascular diseases.

Definitions:

Blood pressure is the pressure exerted by circulating blood on walls of the blood vessels. It is dependent on the total volume of blood circulated through a blood vessel and resistance of vessel. It is calculated as: Blood Pressure (BP) = Cardiac Output (CO) X Peripheral Vascular Resistance (PVR), where cardiac output per minute is: CO = Stroke volume X Heart Rate

Hypertension is defined as a systolic blood pressure (SBP) of ≥ 140 mm Hg and diastolic blood pressure (DBP) of ≥ 90 mm Hg.

Classification of hypertension:

Stages of Hypertension	Systolic BP (mmHg)	Diastolic BP (mmHg)
Normal	<120	<80
Prehypertension	120-139	80-89
Stage 1 Hypertension	140-159	90-99
Stage 2 Hypertension	160 or higher	100 or higher
Isolated Systolic Hypertension	>140	<90
Hypertensive Urgency	>180 systolic BP and >110 diastolic BP without any symptoms and with no evidence of acute target organ damage	
Hypertensive Emergency	>180 systolic BP and >110 diastolic BP with symptoms of associated complications such as: cardiovascular (e.g. left ventricular failure), cerebral (e.g. hypertensive encephalopathy, stroke), renal (acute renal failure), Grade III-IV retinopathy, etc.	

Essential and secondary hypertension:

For most adults, there is no identifiable cause of hypertension. This is called 'Essential or primary hypertension'.

This is observed in about 85-90% of all hypertensive patients. There are few factors known to contribute in development of primary hypertension such as smoking, obesity, family history of hypertension, etc.

In remaining 10-15% patients, hypertension develops secondary to other diseases as renal failure, thyroid dysfunction, etc. and it is called as 'Secondary Hypertension'. Children and young adults (age <30 years) with hypertension have mostly secondary hypertension and they need detailed evaluation to be done to find out exact cause of hypertension. Kidney diseases and kidney failure are one of the most common causes of hypertension in children. They need treatment for both such underlying disease and anti-hypertensive medicines.

Clinical Features:

Hypertension is not a disease in itself, but a risk factor for development of several other cardiovascular illnesses. Majority of patients with hypertension do not have any symptoms.

While some patients with severe hypertension have non-specific symptoms such as headache, blurring of vision, dizziness, etc. Hypertension is often associated with cardiovascular complications such as stroke or angina and such patients exhibit symptoms specific to these illnesses.

Years after having HTN, when patient develops organ dysfunction, symptoms specific to failed organs start showing up:

Heart Failure: dyspnea on exertion, swelling over feet, chest pain on exertion, occasional dry cough, low BP, orthopnea, nocturnal dyspnea

Kidney Failure: foamy urine, decreased urine output, swelling over feet, easy fatigability, puffy face

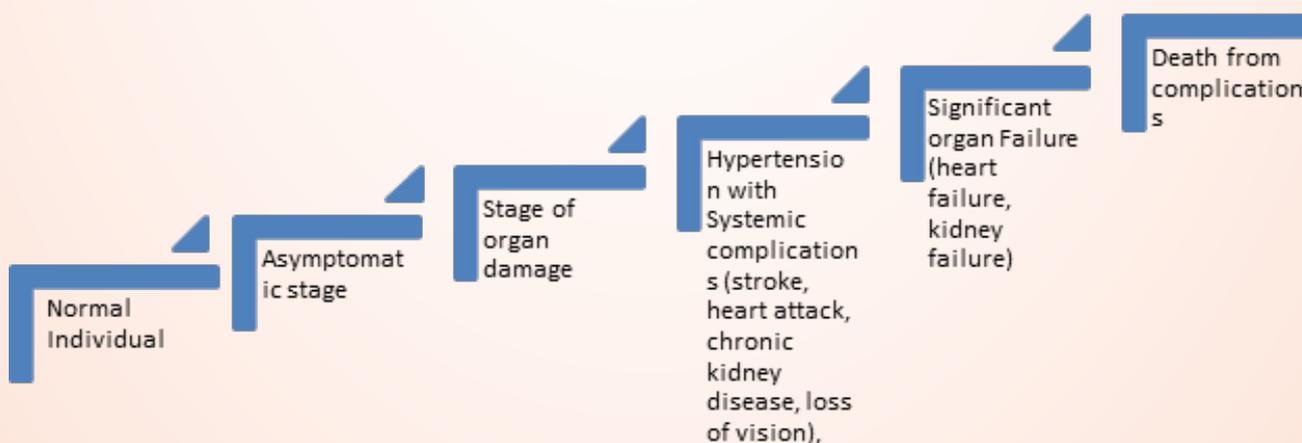
Eye problems: diminished or blurring of vision,

Some patients may develop acute severe emergencies as heart attack or stroke or sudden loss of vision. Those with diabetes and HTN will be at more risk of development of these emergencies.

Natural History of Hypertension:

The average age of development/ diagnosis of hypertension is usually around 40-45 years. Most patients do not know if they have hypertension because they are all asymptomatic. This stage lasts for about 05 years, after which hypertension if untreated started to affect vital organs (as kidney, heart, eyes, etc.) and symptoms of organ dysfunction start to show up. Gradually organs fail completely in their function, and death of patient occurs due to secondary illnesses as infections, acute emergencies with organ failure, etc.

If hypertension is identified and well controlled with anti-HTNs during early asymptomatic phase, then all of the further stages can be delayed by years of duration and quality of life of patient would be increased.



Avoid risk factors, life style changes	Early diagnosis and treatment, life style changes	Identify and treat complications	Manage disabilities and improve functionality
<p>Reduce weight in obese persons Physical activity Avoid smoking and alcohol Treat Diabetes if present Dietary advice Spreading awareness among community regarding HTN, especially for those at risk: persons with family history of HTN, persons with DM, middle age-adults age group, etc.</p>	<p>routine screening of all adults every year with blood pressure levels measurement Counselling and patient education Counselling of family members and caretakers Low salt diet Regular treatment to attain good control over HTN Patient education</p>	<p>Screening of all patients with HTN for complications as Heart disease, loss of vision, kidney disease, etc. and appropriate treatment as indicated Diagnosis and treatment of any associated illnesses as DM- with or without complications, Skin infections, TB, etc. Early identification and appropriate management of uncontrolled blood pressure levels when management with routine anti-HTN fails to attain good controls Timely referral and management of complications as stroke, heart attack at higher center</p>	<p>Provide necessary medical support: dialysis services for HTN with kidney failure, counselling for mental health Provide necessary social support: registration to various health insurance and socail protection schemes, etc.</p>

Diagnosis and Assessment:

#Measurement of Blood Pressure for diagnosis of Hypertension:

- 1) Always measure pulse before taking blood pressure. Observe if the pulse is regular or irregular. If pulse is irregular, then contact MO at PHC/CHC and discuss whether your patient needs immediate referral for further evaluation.
- 2) Use appropriate size of cuff for BP measurement so that the length of the cuff's bladder should be 80% of arm circumference and width should be 40% of arm circumference.
- 3) Make sure if patient has not consumed tea or smoked cigarette/bidi within last 01 hour, had not done some heavy work or is not anxious or at discomfort due to something; otherwise this would give false BP reading.
- 4) Once a reading with high blood pressure is recorded, then make sure patient was comfortably sitting, otherwise make the patient to wait outside and relax and repeat the BP measurement again in 15-20 minutes. If the readings differ by more than 5 mm Hg takes a third reading. The lower of the two readings should be taken as the representative SBP and DBP.
- 5) Also measure blood pressure over other arm. If difference between BP readings from two arms is more than 10mmHg, then contact your MO at PHC/CHC and discuss possible causes of this difference and make plans for further evaluation and referral if necessary.
- 6) Generally two readings of blood pressure measurement taken in clinic on two different visits at your HWC, which are at least 01 to 04 weeks apart are required to confirm the diagnosis of hypertension; the exceptions to this being the cases of hypertensive urgencies and hypertensive emergencies.

#Assessment of patient with Hypertension at HWC level:

Assessment of patient with hypertension for risk of development of cardiovascular diseases must be done at HWC level for all of the patients confirmed to have hypertension in the beginning of the treatment and later during follow up visits. Such an assessment should include following 03 components:

- 1) Assessment of life style related and other cardiovascular risk factors
- 2) Assessment of organ damage
- 3) Assessment of associated clinical conditions

- 1) Assessment of life style related and other cardiovascular risk factors

History : Smoking history, High dietary consumption of salt, Physical inactivity, Alcohol consumption, Family history of premature coronary artery disease and hypertension

Examination : Weight & Height measurement and calculation of BMI (Overweight: BMI >23, Obesity: BMI >25), abdominal circumference

At PHC/CHC level : Counselling and assistance for cessation of smoking and/or alcohol

- 2) Assessment of organ damage (Heart, Kidneys, Eyes)

History : Breathlessness on exertion, swelling on feet, diminished vision

Examination : Oedema, engorged neck veins

Laboratory evaluation : Urine protein +

At PHC/CHC level : ECG, Lipid profile, Sr. Creatinine, Urine analysis, examination of fundus of eyes

- 3) Assessment of associated clinical conditions

History : Episode of chest pain at rest (Myocardial infarction) in past, sudden Weakness of face or limb/ slurred speech/ facial drop (Stroke) in the past, Polyuria, increased thirst, decreased sensations over palms and soles (Diabetes mellitus) or known cases of kidney diseases, frequent consumption of pain killers etc.

Examination : Significant pallor in the presence of HTN– chronic kidney disease,

Laboratory evaluation : Haemoglobin, Random blood sugar (RBS), urine sugar+, urine proteins +

At PHC/CHC level : Detailed clinical evaluation of diabetes, stroke, MI, etc., HbA1C, monofilament testing for sensory charting, chest X-ray

Management of Hypertension at HWC level:

Patient education:

Every patient diagnosed with hypertension needs to be educated and made aware regarding the condition and measures of self-care. Repeat counselling would help to reinforce desired lifestyle changes and attain good patient compliance for the treatment.

Educate all of your patients with hypertension at HWC regarding all of the following points at the time of diagnosis, at the beginning of treatment and also during follow up visits.

A. Nature of disease:

- 1) In a patient with hypertension, blood flows under an increased pressure in blood vessels, which leads to poor blood supply and slow damage to functioning of important organs like heart, kidneys, brain, eyes, etc. and results in the development of various serious illnesses within a variable time period of months to years.
- 2) These disabling and life-threatening complications could be stroke, heart attack and kidney failure, loss of vision, etc.
- 3) In itself it is mostly asymptomatic and patients usually would not know about their status unless BP measurement is done or until they develop some of the complications associated with hypertension.

- 4) Smoking, obesity, alcohol consumption, physical inactivity, etc. leads to increased risk of hypertension and related CVDs.

B. Therapy:

- 1) Treatment is essentially lifelong for most patients.
- 2) Interruptions in between the treatment would lead to poor control of blood pressure levels and thus the risk of development of CVDs would increase again. Therefore treatment should be continued regularly and as per advice given by the health care worker.
- 3) Hypertension has mostly no symptoms except for mild headache and other nonspecific symptoms in some patients; therefore patients would not be able to feel or assess by themselves if blood pressure is controlled or not. Frequent monitoring of blood pressure (at least once monthly) is necessary.
- 4) Being asymptomatic, a patient should not discontinue the treatment. Intermittent treatment is as bad as not taking treatment at all.
- 5) Without lifestyle changes, only medical treatment would not be effective and the risk of CVDs would still remain high.
- 6) All the treatment including medicines, necessary laboratory investigations, etc. is available free of cost at all HWCs and other public hospitals.
- 7) Inform the patient about local initiatives, for example, healthcare team members as ASHA, ANM and MPW of respective village and Patient Support Group if any. All of these workers would assist the patient for continuation of therapy and facilitate them in case any problem occurs regarding the treatment. They would visit patient's house frequently and would also be available for the patient as first point of contact for all the queries.

C. Lifestyle measures: It is important to highlight the important role of lifestyle measures in reducing hypertension and reducing risks of cardiovascular disease. Advise your patient regarding all of the following measures:

- 1) Ask about people's diet and exercise patterns because a healthy diet and regular exercise can reduce blood pressure. Offer the patient to join for various yoga/ wellness activities at your HWC.
- 2) Ask about person's alcohol consumption and encourage a reduced intake if they drink excessively, because this can reduce blood pressure and has broader health benefits.
- 3) Discourage excessive consumption of coffee and other caffeine-rich products.
- 4) Encourage people to keep their dietary salt intake low, as this will effectively reduce their blood pressure.
- 5) Offer advice and help smokers to stop smoking; refer them to tobacco cessation centres for counselling and treatment.

Initiating the treatment:

Once the diagnosis is confirmed, patients with Stage 1 and stage 2 hypertension without associated cardiovascular illnesses and with low risk of CVDs should be advised only lifestyle modifications (including practice of yoga, regular physical activity for at least 30 minutes on 5 days a week, low salt diet, avoidance of tobacco and alcohol) over next 1- 2 months and drug therapy should be initiated only if elevated blood pressures are noted after this period.

Drug therapy is indicated in all patients with stage 2 and stage 3 hypertension with high and very high risk of CVDs should be combined with lifestyle measures; those with $\geq 180/110$ mm Hg be evaluated and started on drug therapy immediately to MO at PHC/CHC.

Following table would help to understand these protocols in detailed manner:

Stage of Hypertension	BP reading during initial visit or current visit		Advice and Recommendations for Follow up
	Systolic BP (mmHg)	Diastolic BP (mmHg)	
Prehypertension	120-139	80-89	<ol style="list-style-type: none"> 1. Advise lifestyle modifications (healthy and low salt diet, regular physical activity, cessation of smoking and alcohol abuse) and advise weight reduction for obese patients. 2. Recheck after 01-02 months and then in next 01 year
Stage 1	140-159	90-99	<ol style="list-style-type: none"> 1. Advise lifestyle modifications for 01-02 months. Recheck BP within 1 month. 2. Refer to your MO at PHC/CHC for further assessment and treatment after 01-02 months, if BP is still high even after life style changes are observed by the patient.
Stage 2	160-179	100-109	<ol style="list-style-type: none"> 1. Advise lifestyle modifications. 2. Recheck BP within 1-2 weeks. 3. Refer to your MO at PHC/CHC for further assessment and initiation of treatment.
Hypertensive urgency/emergency	>180	>110	<ol style="list-style-type: none"> 1. Repeat the BP measurement in 15-20 minutes again in both arms to confirm the finding. 2. Check for any symptoms/signs of any acute target organ damage (assess symptoms and signs referred to in the mnemonic 'ABCDEFG'¹) 3. In cases of acute target organ damage, consider as hypertensive emergency. 4. Refer to PHC/CHC for evaluation and treatment immediately after confirming elevated readings in this range. Initiate therapy before referral, if seen at PHC.

Source: Guidelines for screening, diagnosis, assessment and management of primary hypertension in adults in India (March 2016) by MoHFW

Apart from giving advice for lifestyle measures and giving medicinal treatment for HTN, other important things to be done at HWC level are:

1) Registration of patient in your records at HWC:

Register details of patient in his respective family folder, your NCD register and also over IT application (CPHC-NCD Application or other state owned application); this will help you to monitor the progress of patient's condition during follow up visits.

2) Communication within your team at HWC and sharing of responsibilities with ANM/MPHW and ASHA for village based follow up of this hypertensive patient during their routine visits to respective village.

Follow up of Patient with Hypertension in OPD at HWC:

Strict adherence to regular treatment (including both lifestyle measures and anti-HTN medicines) is essential to control and keep blood pressure levels within normal limits. The target for control of BP should be systolic blood pressure less than 140 mm and diastolic blood pressure less than 90 mm. CHO should indent, stock and dispense only those anti-hypertensive medicines that have been prescribed by the MO, as advised.

Usually 01 monthly follow up of all patients with hypertension at HWC-SHC is suggested, but depending upon presence of associated illnesses or complications, some may need more frequent monitoring at HWC-PHC or CHC level. Few of such patients with complicated disease should be monitored and followed up at PHC or CHC level intermittently as suggested by MO. Most other patient would have no complications and can easily be monitored at HWC-SHC level only.

Following scheme of evaluation would help you to monitor patients with HTN at your OPD in HWC-SHC:

¹ ABCDEFG (Abbreviation explained)- A: Altered consciousness B: Breathlessness C: Chest pain (Ischemic) D: Deficit (weakness of limbs) or Decreased Urine output E: Edema F: Visual Field disturbances G: Generalised seizures

A] ASK:

- Q. Are there any new symptoms or complaints? If yes, then ask relevant history.
- Q. Do you have any new symptoms such as difficulty in breathing on exertion, chest pain, swelling over feet, diminished vision, etc.?
- Q. Is there anything that you could do previously (in last 5-6 months) and that now you are having difficulty in doing the same?
- Q. What is the schedule of taking medicines that you follow everyday? If no, then then what is the reason for poor compliance?
- Q. Are you taking medicines regularly? Do you ever miss any dose of anti-HTNs?
- Q. Do you smoke cigarettes/bidis or drink alcohol? Do you want to stop taking it?
- Q. Do you have food cooked with less amount of salt? What other lifestyle changes do you follow as were advised to you?

B] EXAMINE:

- General condition of patient and gait
- Body Weight/BMI
- Pulse rate and Blood Pressure levels
- Swelling over feet, pallor
- Other relevant examination
- Blood tests

C] ASSESSMENT: (also see Page 04)

Based on your evaluation as above, you will arrive at the point of time, when you will make decisions regarding continuity of the treatment.

If Blood Pressure is well controlled and patient has good compliance to treatment, has no new symptoms and no worsening of old symptoms and is able to perform all his routine functions/activities: Continue same treatment, encourage patient to continue all lifestyle changes, congratulate and reassure your patient for having well controlled BP levels.

If Blood Pressure is well controlled (or not controlled) and patient has new cardiac/respiratory symptoms (chest pain/shortness of breath) and has decreased overall functionality of the patient: Evaluate according to presenting complaints of the patient, discuss with PHC-MO/ teleconsultant if available and refer to PHC/CHC if patient is sick as per PHC-MO's suggestions.

If patient has poor compliance to treatment: Ask him/her in details about causes for not following up regularly, offer appropriate help, counsel and encourage patient to continue regular treatment. Inform your ASHA and MPW/ANM about this patient and ensure that team members visit his home to counsel and encourage regular treatment.

If Blood Pressure is not well controlled even with good compliance of patient to treatment: Take repeat measurement after 10-20 minutes to confirm the reading, ask your patient if he/she is following lifestyle changes as advised, discuss with PHC-MO and if necessary or suggested by MO, then refer the patient to PHC/CHC for further evaluation and increasing the dose/ making revisions of the treatment plan.

If Patient has both Hypertension and Diabetes and other associated complications (heart/kidney diseases): Evaluate if both Blood Pressure and blood sugar levels are controlled and take help from PHC-MO/teleconsultant if either is poorly controlled. Some patients may need high dose of antihypertensive medicines or even 02 to 03 antihypertensive medicines to be taken everyday.

D] ADVICE:

- Advise all your patients to continue low salt diet, eat plenty of fresh fruits and vegetables, reduce and stop tobacco and alcohol abuse and follow exercise/yoga/ wellness activities at your HWC. Physical exercise for half an hour for at least five days in a week may be advised.
- Advise all your patients to continue regular treatment, as BP levels would not be controlled with intermittent irregular treatment, resulting in increased risk of cardiovascular diseases.
- Advise all your patient to immediately contact the ASHA in their village for any new symptoms, and visit HWC.
- Repeatedly inform your patient about

Management of Hypertensive Emergency and Hypertensive Urgency at HWC:

As defined above, both hypertensive emergency and urgency are featured by severe hypertension (stage 3 HTN- BP >180/110mmHg); difference lies in that presence of any evidence of acute target organ damage (mainly any one of the Brain, Heart, Kidney or Eyes) is called as Hypertensive Emergency.

Basically, both of these conditions have severe hypertension and great risk of developing disabilities or even death from complications. In hypertensive urgency, this risk is high, but there are no signs or symptoms of any such complications; the goal of treatment is to control the blood pressure gradually and to decrease down the risk of any complications. In cases with hypertensive emergency, some of these life threatening complications have already started to develop; the goal of treatment is to minimise the severity and extent of these complications, resolve the damage that has already set in and control the blood pressure and decrease the risk of further complications.

The most important thing to remember here is that, it is not required to rapidly decrease the blood pressure using antihypertensive tablets in both these conditions because, rapid lowering of blood pressure will lead to poor blood supply to vital organs like brain, heart and kidneys, etc. and therefore result in worsening of the patient's condition.

At HWC level, it is advisable only to identify the condition earlier, communicate with MO at PHC/CHC and immediately refer the patient in ambulance to appropriate higher facility.

Antihypertensive Medicines: Note: Anti-hypertensive medicines cannot be prescribed by the CHO. However, once prescribed by the MO at referral centre (PHC/CHC), CHO can indent, stock and dispense the required medicines to individuals as advised by the MO.

S. No.	Name	Minimum Dose	Maximum Dose	Schedule	Common and non-severe side effects
1.	Calcium channel blockers, Eg. Amlodipine (Preferred first choice as antihypertensive for elderly patients)	5mg/day	10mg/day	Once a day, orally	Swelling over ankles
2.	ACE inhibitors, Eg. Enalapril (Preferred first choice as antihypertensive for young patients age less than 40-45 years and for patients with both diabetes and HTN)	5mg/day	20mg/day	Twice a day (12 hourly), orally	dry cough, [*Enalapril is contraindicated and to be strictly avoided in pregnancy]
3.	Diuretics, Eg. Hydrochlorothiazide	12.5mg/ day	50mg/day	Once a day, orally	Increased urine output
4.	Beta blockers, Eg. Atenolol	50mg/day	1 0 0 m g / day	Once a day, orally	Reduced heart rate [Beta blockers should be strictly avoided in patients with history of Asthma]

Patient Management Workflows in OPD at HWC level:

Newly diagnosed patient with Hypertension:

1. Population Based screening using CBAC	
2. Risk Assessment	<ul style="list-style-type: none"> • History taking • Examination and • lab tests
3. Patient Registration	<ul style="list-style-type: none"> • Patient Registration to details to be captured on CPHC-NCD or State Specific Applications • NCD Register, • Family Folder
4. Counselling and Education	<ul style="list-style-type: none"> • Nature of Disease, • Therapy and • Lifestyle Measures
5. Plan of Management	<p>As per risk assessment and staging of HTN</p> <ul style="list-style-type: none"> • Lifestyle measures • Medical therapy to be initiated by MO at referral centre and reverse referrals for follow ups to be defined by MO.
6. Plan for follow up Visit	<ul style="list-style-type: none"> • Date for follow up, • Sharing of responsibilities with ANM/MPW. • Sharing of responsibilities with ASHA.

Previously Diagnosed Patient with Hypertension:

Assessment: New illness, Compliance to treatment: Lifestyle Measures and Medicines, Risk assessment	
BP not well controlled	BP well controlled
Find Reasons	<ol style="list-style-type: none"> 1. Continue same treatment, 2. Encourage patient to continue good compliance, 3. Date for follow up
<p>A) False readings ? Ask patient to wait for 10-20 minutes, sit and relax for this time in waiting area and then take repeat measurement</p>	<ol style="list-style-type: none"> 1. Inform PHC-MO about the patient, 2. Continue same treatment for now, 3. Refer patient to PHC-MO, 4. Date for follow up
<p>B) Poor drug compliance ? 1. Ask patient to confirm, 2. Counsel and help patient to resolve any issue 3. Inform PHC-MO and continue same treatment</p>	
<p>C) Poor compliance to life style measures ? 1. Ask and listen reasons for poor compliance, 2. Counsel and help patient to resolve relevant issues, 3. Explain importance and benefits of lifestyle measures to patient, 4. Encourage patient to restart observing all lifestyle measures</p>	

DIABETES MELLITUS

Learning Objectives:

After studying this topic, you should be able to understand:

- 1) How to confirm the diagnosis of Diabetes and how to do assessment of these patients at HWC level.
- 2) How diabetes affects different organ systems of the body and how these complications may present to you at HWC and how to manage them.
- 3) What and how should be patients with diabetes educated regarding illness and self-care.

Introduction:

Diabetes mellitus is a group of metabolic diseases characterized of hyperglycaemia resulting from defects in insulin secretion, insulin action or both. The chronic hyperglycaemia is associated with longterm damage, dysfunction and organ failure especially of eyes, kidneys, nerves, heart and blood vessels.

Problem Statement:

The worldwide prevalence of DM has risen dramatically over the past two decades; currently the countries with the greatest number of individuals with diabetes in 2015 are China (109.6 million), India (73 million), the United States (30.3 million), Brazil (14 million), and the Russian Federation (9 million).

About 85-95% of all patients with diabetes have type 2 DM and about 05-10% have type 1 DM in India; the actual amount of person diagnosed and treated with either type I or II DM out of total number is patients is relatively a lower proportion.

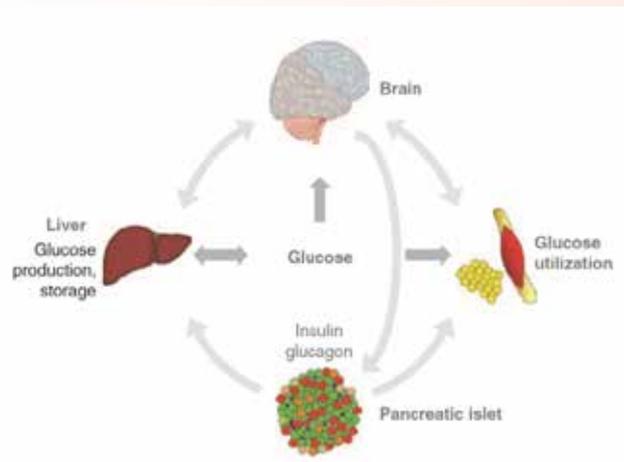
About 25% of all patients ultimately end up having kidney related complications and kidney failure in about 15-20 years after the diagnosis of DM is confirmed; these are all candidates eligible of for medical treatment and dialysis. Compared with

nondiabetic persons, patients with diabetes have a two- to fourfold increased risk for development of and death from CHD.

Diabetics are more prone to develop mild to severe infections requiring frequent hospitalisation. Diabetic foot is recently the commonest reason for hospitalisation among diabetics.

Pathophysiology and Types of DM:

Glucose homeostasis reflects balance of glucose levels in body between inputs of glucose (ingestion of food, absorption of glucose from food in intestines, new production of glucose in liver) and outputs of glucose (utilization of glucose by brain, muscles, other organs, storage of glucose in liver, excretion of glucose in urine) [see figure below].



Insulin is the most important hormone that controls and lowers down the increased glucose levels in blood within a range that is enough to meet the physiological needs of glucose for the body. In patients with diabetes mellitus, either production of insulin decreases or its effectiveness is lowered or both; this results in excessive increase in blood glucose levels.

Depending upon the causes of development, age at onset and physiological changes, two main types of diabetes have been identified; while there are few special types of diabetes at Gestational DM, Maturity onset Diabetes in Young (MODY), etc.

No.	Features	Type 1 DM	Types 2 DM	Gestational DM
01.	Age at onset	Mostly at young age <20 years (05% adults with DM have type 1 DM)	Common in age groups >30 years, more common with middle age groups and increasing age	During 2 nd and 3 rd trimester of pregnancy
	Causes/ Risk Factors	Genetic defects	Family history of Diabetes, Obesity, physical inactivity, Hypertension, PCOD, abnormally increased cholesterol/lipid levels, history of GDM, smoking	Family history of DM or GDM
	Patho-physiological Changes	Destruction of Insulin Producing cells leading to absolute insulin deficiency	Both decreased effectiveness of insulin and partial deficiency of insulin	Decreased effectiveness of insulin by various mechanisms
	Natural Course of disease	Once developed, disease gradually progresses and cause organ damage to kidneys, eyes, nerves, heart, blood vessels, etc. over years Early treatment results in prolongation of life and delay on organ damage	Once developed, disease gradually progresses and cause organ damage to kidneys, eyes, nerves, heart, blood vessels, etc. over years Early treatment results in prolongation of life and delay on organ damage	Appears for first time during pregnancy in previously non-diabetic women, Gradually resolves completely after delivery
	Incidence in India	Less common, about 05% of all diabetics	More common than type 1	10-15% of all pregnancies
	Medical Treatment	Inj. Insulin daily as lifelong treatment	Oral Antidiabetic Agents or Inj. Insulin if required	Oral Antidiabetic Agents or Inj. Insulin if required
	Complications	Eyes: Cataract, Refractive errors, Retinal damage-retinopathy Kidneys: proteinuria, nephrotic syndrome, kidney failure Heart: Heart attack, heart failure Blood Vessels: atherosclerosis (thickening and stiffening of blood vessels), stroke/heart attack Nerves: nerve injury, loss of sensations, diabetic foot	Eyes: Cataract, Refractive errors, Retinal damage-retinopathy Kidneys: proteinuria, nephrotic syndrome, kidney failure Heart: Heart attack, heart failure Blood Vessels: atherosclerosis (thickening and stiffening of blood vessels), stroke/heart attack Nerves: nerve injury, loss of sensations, diabetic foot	Complications in Mother: -Polyhydramnios -Pre-eclampsia -Prolonged labour -Obstructed labour -Caesarean section -Uterine atony -Postpartum haemorrhage -Infection -Risk of DM later in life Complications in Child: -High risk of DM later in life -Spontaneous abortion -Intra-uterine death -Stillbirth -Congenital malformation -Shoulder dystocia -Birth injuries -Neonatal hypoglycaemia -Infant respiratory distress syndrome

Clinical Features:

Increased urination (volume and frequency), increased thirst, increase appetite and weight loss are commonly associated symptoms of hyperglycaemia in DM, but they do not necessarily present in all patients with diabetes as many patients are asymptomatic for months in the beginning.

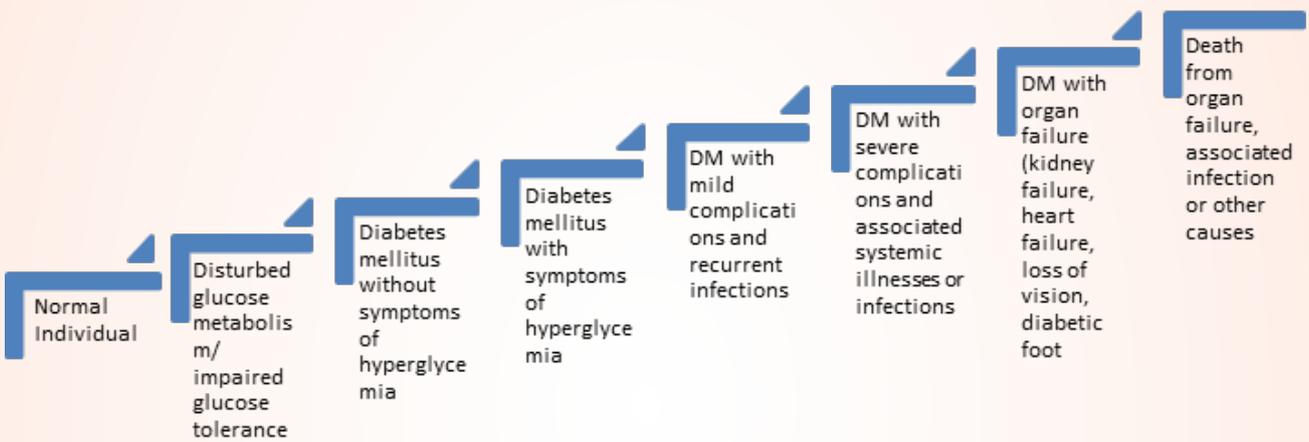
Other symptoms include fatigue, weakness, blurry vision, frequent superficial infections (vaginitis, fungal skin infections), and slow healing of skin lesions after minor trauma.

Some patients with diabetes, who are diagnosed at later stage may already have developed other associated illnesses like hypertension, heart attack, heart failure, kidney failure, diabetic foot, non-healing ulcer or wounds, tuberculosis, etc. and present to the clinic with symptoms of respective illnesses and accidentally get diagnosed to have diabetes during routine screening.

Some patients with diabetes who remain underdiagnosed sometimes show up in emergency room with very high levels of blood sugar (RBS >800mg/dl or >1000mg/dl) associated with severe dehydration and unconsciousness. They need immediate treatment with IV fluids and insulin and referral to SDH/DH level hospital.

Natural History of Disease:

Majority of diabetic patients have no symptoms for many months or years in the beginning. If diagnosed and started on treatment during this stage, further complications can be delayed by several years.



Avoid risk factors, life style changes	Early diagnosis and treatment, life style changes	Identify and treat complications	Manage disabilities and improve functionality
<ul style="list-style-type: none"> • Reduce weight in obese persons • Physical activity • Avoid smoking and alcohol • Treat hypertension if present • Dietary advice • Spreading awareness among community regarding diabetes, especially for those at risk: persons with family history of DM, obese persons, middle age-adults age group, etc. 	<ul style="list-style-type: none"> • routine screening of all adults every year with blood glucose levels measurement • Counselling and patient education • Counselling of family members and caretakers • medical nutrition therapy • treatment to attain strict sugar control • Patient education to prevent hypoglycemia 	<ul style="list-style-type: none"> • Screening of all patients with DM for complications as diabetic foot, loss of vision, kidney disease, etc. and appropriate treatment as indicated • Diagnosis and treatment of any associated illnesses as hypertension, heart disease, Skin infections , TB, etc. • early initiation of insulin when oral agents fail to control sugar levels 	<ul style="list-style-type: none"> • Provide necessary medical support: dialysis services for DM with kidney failure, counselling for mental health • Provide necessary social support: registration to various health insurance and socail protection schemes, etc.

In absence of any treatment, diabetes progresses gradually to cause injury followed by failure of vital organs as shown in the diagram given below. Any associated illnesses such as hypertension, underlying heart or chronic kidney disease (other than diabetic kidney disease) will result in early worsening of patient's condition.

Diagnosis and Assessment of Diabetes at HWC level:

Measurement of blood sugar levels is the single most important test for both screening and confirmation of diagnosis of diabetes mellitus. Following is the diagnostic criteria based on blood sugar level measurements:

	Normal Range	Impaired Glucose Tolerance/ Prediabetes	Confirmed Diabetes Mellitus
*Random Blood Sugar Levels (RBS)	—	—	≥ 200mg/dl (with symptoms of diabetes)
**Fasting Blood Sugar Levels (FBS)	70-110mg/dl	110-125 mg/dl	≥ 126mg/dl
Post-prandial 02hours Blood Sugar Levels (PP2BS)	<140mg/dl	≥140mg/dl but <200mg/dl	≥ 200mg/dl
***HbA1c	≤5.6%	5.7-6.4%	≥ 6.5% ²

[* Individuals with random plasma glucose between 140-199mg/dl are recommended to undergo OGTT.

** Fasting Blood glucose levels, patient should not have consumed food for at least last 08 hours.

*** HbA1c is an important indicator of long-term glycemic control, which gives an idea about overall control of blood glucose levels during the period of past two to three months. Unlike blood glucose levels, it is independent of time since last meal taken by the patient. This test is available at CHC/DH levels and should be done for every patient at least 2 times/ year.]

Oral Glucose Tolerance Test (OGTT):

In this test, 75g of glucose solution is given to the patient to drink, after which blood sugar levels are measured at 01 and 02 hours interval and results are compared to the above standard criteria. This test is more convenient for the patient in that patient need not remain fasting for long duration and results are independent of last meal consumed by patient. It is the standard of diagnosis for gestational DM.

Management of Diabetes at HWC level:

Treatment Goals:

The goals of therapy for both type 1 or type 2 diabetes mellitus (DM) are to:

- (1) eliminate symptoms related to hyperglycemia,
- (2) reduce or eliminate the long-term microvascular and macrovascular complications of DM,
- (3) allow the patient to achieve as normal a lifestyle as possible.

Management of Type I DM:

There is complete absence of insulin production in patients with type I diabetes and the medical management with daily administration of insulin for life long is essential. Patients are trained to give subcutaneous injections of injection to self over abdomen or thigh. Dose of insulin is titrated from time to time during follow up. As the child with type I DM grows up, his physical activity, body weight, physiological requirement of glucose and insulin, etc., everything changes and dose of insulin may vary and is therefore needs to be titrated. Follow up at PHC/CHC level where insulin is available and MO is trained to monitor patients on insulin is advisable.

At HWC level, your role as a CHO is to keep record of all patients with type I DM in your area and visit them at home or coordinate with team members (ASHA, ANM, MPHWH) for follow up house visits of such patients.

During house visits, you as a CHO or any health worker should ask if patient has any difficulty in getting medicines or in administration of insulin. Patients should be screened for any signs or symptoms related to complications of diabetes (similar to patients with type II DM).

² ICMR guidelines for management of diabetes, 2018

Due to administration of regular injections, these patients usually develop swellings or painful masses over respective areas (lower abdominal wall or anterior part of thighs); this occurs due to destruction of fatty tissue in that area. There is high risk of getting infections and developing abscesses at these injection sites, especially when technique of administering injection is incorrect. Therefore these patients should be examined for presence of any such swelling and injection technique should be observed for accuracy during house visits.

Insulin rapidly decreases blood sugar levels as compared to oral antidiabetic agents, therefore patients are at high risk of developing hypoglycaemia. Patients with type I DM should be trained to identify symptoms of hypoglycaemia. They should always carry with themselves a sachet of table sugar or some sugarcandy or chocolates in pocket/purse so as to treat symptoms of early hypoglycaemia and thus prevent severe hypoglycaemia. These patients should be repeatedly counselled for this purpose.

Management of Type II DM:

Essential elements in management of Type 2 DM:

- 1) Individualized glycemic control
 - Diet/lifestyle • Exercise • Medications
- 2) Treat associated conditions
 - Dyslipidemia • Hypertension • Obesity
- 3) Screen for/manage complications of diabetes
 - Retinopathy • Nephropathy • Neuropathy • Cardiovascular diseases • Other complications

1] Diet and Lifestyle:

Dietary control of intake of sugars is most important part of management of diabetes. MO at PHC/CHC should evaluate and prepare a meal plan for every patient. Your role is to encourage patient to follow this plan, let patient share with you, difficulties if any and communicate those with MO to modify meal plan as required.

What should you ask?

- ask for history of any addictions, such as smoking/chewing tobacco, alcohol abuse, etc.
- ask history of food habits such as timings of food, daily consumption of food,
- ask for history related to sleeping pattern

What should you advise?

- Advice and help patient to quit smoking and alcohol abuse, refer to tobacco cessation centres as indicated.
- Advice patients to take small frequent meals instead of 02 large meals per day
- Encourage daily intake of seasonal fruits, vegetables as available to patient
- Avoid junk foods, especially fried packed foods
- Avoid salty foods, added salt to food and prefer low salt diet
- Advise to avoid stress, and avoid long working hours/strenuous activities

2] Exercise:

Exercise directly helps to use excessive blood sugars and improve effectiveness of insulin. Therefore lower dose of medicines or inj. Insulin is required to control blood sugar levels. It also helps to lose weight and is associated with decreased risk of CVDs.

Plan for exercise should be made differently for each patient considering individual capacity, and choice of patient. The type of exercise that a patient can do regularly is the best exercise for that patient. Your role as a CHO is to discuss various options with patient and advice and encourage him/her to do regular exercise.

What should you ask?

- Ask history of type and duration of routine work – whether moderate to heavy work or clerical job, etc.
- Assess overall lifestyle pattern- whether active or sedentary

What should you advice?

- Advice patient to avoid sedentary lifestyle and encourage optimum physical activity every day, at least 30 minutes of brisk walking per day and 05 such days per week at least.
- Exercising before bedtime must be avoided.
- Avoid exercise when feeling ill and stop exercise when symptoms if hypoglycaemia appear.
- Patients with neuropathy should do not do exercise that require weight bearing/ extra pressure over feet. They should avoid exercise such as running, brisk walking, weight lifting and instead prefer exercises like bicycling, swimming, sitting type exercises (as selected yoga aasana) or upper arm/body exercises.

3] Medicines/ Oral Anti-Diabetic agents: Note: Anti-diabetic medicines cannot be prescribed by the CHO. However, once prescribed by the MO at refereal centre (PHC/CHC), CHO can indent, stock and dispense the required medicines to individuals as advised by the MO.

Medicines are the mainstay of treatment of diabetes; their main action is to bring down the increased levels of blood sugar within normal range through different mechanisms. The dose needs to be titrated for each patient based on his/her blood sugar levels.

Metformin is drug of choice and mostly treatment is started with initial dose of metformin, which is then titrated up to maximum dose gradually over few weeks, as required. When blood sugar levels are not controlled with maximum dose of metformin, then second drug Glimepiride is added with its initial dose. Glimepiride is then titrated up if required.

Some patients may need a third drug to be added. Few patients are poorly controlled even with maximum doses of all these main drugs and they need to be started on insulin therapy at PHC/CHC level.

Name of Drug	Metformin	Glimepiride
Dose	Initial Dose: 500mg, Twice daily Maximum Dose: 2000mg per day (i.e. 1000mg twice daily)	Initial Dose: 1mg, Once daily Maximum Dose: 08mg per day (i.e. 04mg twice daily)
Schedule	Divided into 2 or 3 times per day, Taken after meal	Once in a day, or divided into two doses, Taken 30 minutes before meal
Mechanism of Action	Decreases glucose production in liver	Stimulate pancreas to increase insulin production
Benefits	- Drugs of choice for diabetes, - Promotes weight loss, - Do not cause hypoglycaemia, - Well tolerated drug with usually no complications	- safe to use in presence of heart disease - can be given in patients with mild to moderate kidney disease - Usually well tolerated
Adverse effects	Mild adverse effects that subside with time, these are: Abdominal pain, anorexia, bloating, nausea, metallic taste, mild diarrhoea and tiredness	-Hypoglycaemia: it is commonest side effect of this drug, occurs more if patient performs strenuous exercise or heavy work -Nausea, vomiting occasionally
Cautions	1) To be avoided in patients with Kidney Disease (when Sr. Creatinine is >1.5), 2) To be avoided in sick hospitalised patients with heart failure, respiratory failure	To be avoided during pregnancy and during lactation

4] Dyslipidaemia:

Dyslipidaemia is abnormally increased levels of various types of fat in blood. This may lead to thickening and blockage of arteries to important organs. It is most important mechanism of development of cardiovascular diseases (CVDs) such as heart attack, stroke, etc. Both obese and thin built patients with diabetes can have dyslipidaemia resulting in increased risk of CVDs.

How should you diagnose it?

Levels of fat (triglycerides) in blood should be checked from time to time at PHC/CHC level. Medical Officer will interpret the test results to confirm the diagnosis.

Your role as a CHO is to follow the schedule for lab tests and ensure all your patients with diabetes have been tested for dyslipidaemia.

How should you manage it?

MO at PHC/CHC will advise and start the treatment for dyslipidaemia with oral tab. Atorvastatin (10mg once daily).

Your role as a CHO is to monitor and counsel such patients for dietary control of fatty/oily/junk foods.

For routine household use, mustard oil, soya bean oil, rice bran oil and groundnut oil, etc. should be preferred over sunflower oil, palm oil, ghee, butter and coconut oil.

5] Hypertension:

Many patients at your HWC would have both DM and HTN at same time, taking treatment for both of these. Both conditions would mostly need lifelong monitoring and treatment. This requires patients to take multiple medicines with different doses and schedule and can sometimes cause confusion and incorrect dosing.

How should you diagnose it?

All of the patients with diabetes alone must get their blood pressure checked during every follow up visit. All patients with hypertension alone must be screened for diabetes at least 1-2 times in a year.

During every follow up visit at HWC OPD or during house visit, you should confirm if your patient is taking all the medicines regularly and according to correct doses and schedule.

How should you manage it?

For patients with DM and HTN with/without associated illnesses, MO at PHC/CHC will prepare the treatment plan and make decisions regarding choice of drugs, dose and schedule according to sugar and BP levels of the patient.

You and your HWC team should educate and counsel family members of such patients regarding how to take care of their patient, what schedule of medicines is to be followed and when should they get their patient for follow up at HWC.

6] Obesity:

It is one of the commonest problems often associated with diabetic patients. Control of obesity with weight loss upto desirable BMI range helps to control blood sugar levels.

How should you diagnose it?

Parameters to define Obesity:

Parameter	Criteria
Body Mass Index (BMI) BMI (Kg/M ²) = $\frac{\text{Weight of person (Kg)}}{[\text{Height of person (Meter)}]^2}$	Underweight: <18.5 Normal: 18.5-22.9 Overweight: 23-24.9 Obesity Grade I: 25-29.9 Obesity Grade II: 30-34.9 Obesity Grade III: >35
Waist Circumference	>90cm in Men >80cm in Women
Waist-Hip Ratio	>0.9 in Men >0.8 in Women

How should you manage it?

MO at PHC/CHC should make a daily/weekly meal plans for individual patients according to food availability, local food practices, likes/dislikes and BMI of the patient, to help reduce the excess weight.

Role of you and your team would be to encourage your patient to follow such meal plan and monitor weight/BMI during every follow up visit for all patients. You should encourage patients to participate in wellness activities at your HWC.

You should also communicate with MO regarding difficulties faced by the patient from observing meal plan and coordinate to make dietary plan patient friendly and effective.

7] Diseases of Eyes in Diabetes:

Diseases of eye are quite common in patients with diabetes than general population. Refractive errors, cataract and retinal disorders are all seen commonly in these patients. After 05 years of diabetes, about 50% or more patients develop retinal problems and many of them are asymptomatic for long duration.

How should you diagnose it?

Many patients with eye complications will have no symptoms of visual impairment. Thus regular screening of all diabetic patients by MO or an Eye specialist is necessary.

Your role is to ask for symptoms of visual impairment and to ensure that every one of your diabetic patients get screened for eye complications, at least once in a year. Those who have already developed any complications would require more frequent visits.

Patients with both diabetes and hypertension are at more risk of loss of vision. Other risk factors in diabetic patients are long duration of diabetes, poor blood sugar control, associated kidney diseases, smoking, dyslipidaemia, etc.

How should you manage it?

Asymptomatic patients with any of the above risk factors should be prioritised to get screening eye check-ups done by eye specialist.

Patients may come to you with symptoms related to eye complications, these are: blurring of vision, blurring of vision during night/darkness only, inability to distinguish between colours, pain and watering of eyes, sudden and complete loss of vision from one or both eyes, etc. Patients with symptoms will need early evaluation by MO.

8] Kidney Diseases in Diabetes:

Diabetes is most common cause of kidney diseases in adults. Poor control of blood sugar levels is a risk factor for development of kidney dysfunction. Presence of dyslipidaemia and hypertension further increases the risk. Usually, kidney dysfunction is reversible with treatment for initial 05-06 years, after which the disease

becomes obvious, signs and symptoms of kidney failure start showing up, which is irreversible and leads to death within next 05-10 years.

How should you diagnose it?

The most important sign of kidney dysfunction due to diabetes is proteinuria i.e. excessive loss of proteins (especially albumin) in urine. Your role is to test every patient with diabetes with urine dipstick test for presence of proteinuria at the time of diagnosis and once every yearly after that.

Mostly patients are asymptomatic in early phases, but later as kidney disease worsens, patients present with swelling over both feet/ankles, fatigue, foamy urine, etc. If not identified early, patients with these symptoms must be tested and treated after confirmation of diabetic kidney disease.

How should you manage it?

If proteinuria is present at the time of diagnosis, then MO at PHC/CHC should do further evaluation and start treatment for both diabetes and kidney disease.

For many patients with early stages of kidney disease, good control of blood sugars helps to significantly improve kidney function. Your role as a CHO is to ensure that patient has good compliance to treatment of diabetes and achieves well controlled blood sugar levels. Hypertension and dyslipidaemia should be managed as per the guidelines.

With chronic kidney disease, anaemia is commonly seen, and these patients should get their haemoglobin (Hb) checked at least every 06 months and anaemia if present should be treated with help of MO at PHC/CHC.

NSAIDS (Ibuprofen, diclofenac, aspirin) and aminoglycosides (streptomycin, gentamicin) should be strictly avoided in all patients with kidney disease, as these drugs directly affects kidneys causing worsening of dysfunction.

Low salt diet and low protein diet should be advised to the patients.

9] Diseases of Nerves in Diabetes (Neuropathy):

Chronic hyperglycaemia leads to direct injury to various nerves and impaired blood supply to them. Symptoms and signs of nerve damage depend on the location and function of the nerve.

Nerves to peripheries (hands and feet) are more commonly injured. This cause loss of protective sensations (as touch, pain, temperature, vibration, etc.) over feet, soles and hands. This puts patients at risk of developing injuries to these areas that can go unnoticed until development of secondary infection in wounds. Patients also complain of tingling sensation and numbness over feet and hands.

Later with neuropathy, small joints of feet becomes stiff and deformed, ulcers develop over feet/ soles from small crack in the skin. These ulcers often take weeks or months to heal or may not heal and require amputation causing permanent disability in the patient.

Nerves to internal organs such stomach, urinary bladder and genitals may also get affected. Patients would then complain of nausea, fullness of abdomen, constipation, incomplete evacuation of urinary bladder, involuntary uncontrollable dribbling of urine in clothes, erectile dysfunction, etc.

How should you diagnose it?

A good history taking is all what is needed to identify early symptoms of neuropathy. Ask all your patients if they ever felt any of the above symptoms.

Examine both feet/ soles of all diabetic patients during every follow up. Counsel and educate them to take care, prevent injuries and examine feet everyday to look for any cracks, injuries to the skin. (See annexure 05)

Refer suspected patients to PHC/CHC to get monofilament testing for confirmation of peripheral nerve damage.

How should you manage it?

Prevention of neuropathy and associated injuries is better than treatment of neuropathy and its complications. Good control of blood sugar levels is essential to avoid or delay nerve injuries.

Management of diabetic foot with nonhealing ulcer requires surgical treatment with multiple debridements of ulcer, failing which amputation of toe or foot becomes necessary. Your role at HWC is to help these patients to take care and dressing of wounds over feet and refer them to appropriate center with available surgical care (DH/ Medical College).

10] Cardiovascular diseases (CVDs) in Diabetes:

Diabetes causes damage to both small and large arteries that supply blood to vital organs. Injury to large arteries of heart and brain results in increased risk of heart attack and stroke in diabetic patients (refer Annexure for clinical features of stroke). Hypertension and dyslipidaemia if present, further increases this risk. Some of the patients may develop heart failure over few years.

Recovery from CVDs is more difficult for diabetic patients compared to non-diabetic patients.

How should you diagnose it?

Both heart attack and stroke present with sudden development of clinical signs and symptoms. They may be associated with some warning signals in some patients. (See Annexure 01)

How should you manage it?

Both stroke and heart attack are high risk emergency situations that require treatment at higher centres like district hospital or medical college. Your role in their management is to identify the symptoms and arrange for early referral to higher centres.

To prevent CVDs in diabetics, the key is to control blood sugar levels, control hypertension and treat dyslipidaemia. Smoking and alcohol abuse would independently increase risk of CVDs; therefore diabetic patients should be counselled and helped to quit smoking and alcohol abuse.

11] Infections:

Diabetes results in gradual decrease in functioning of immunity system over few years. Both type 1 and 2 DM patients are at increased risk for infections, commonly of the lower respiratory tract, urinary tract, skin and soft tissue.

Due to damage to nerves and loss of sensations, local trauma to foot causing skin ulcers and secondary infections that often go unnoticed, which leads to diabetic foot and complications. Complicated infections need long term antibiotics and other treatment; this may result in increased financial burden on the patient.

Tuberculosis is common public health problem in India, and diabetic patients are more susceptible to get it. Also Tuberculosis causes more damage in diabetic patients; it is difficult to treat and is often associated with complications.

How should you diagnose infections?

Role of you and your team is to help patient to prevent any infection as well as to be vigilant for early identification of any infection in diabetic patients.

You should specifically ask for history of any episodes of fever or any acute simple or severe illness/ complaints that your patient observed since his/her last visit to your HWC.

You should examine nails of hands/toes and soles of both feet of all diabetic patients in your OPD at HWC, so that even small infections are not missed out.

You should suspect pulmonary tuberculosis in diabetic patients, if they present with dry or productive cough of even 01 week long duration and send their sputum samples for microscopy testing at PHC/CHC.

How should you manage infections in diabetes?

Fever should be confirmed by taking measurements with digital thermometer.

Any symptom/sign of localised infection in a diabetic patient needs to be investigated and treated. You should take help of MO at PHC for confirmation of diagnosis of infection and choice of treatment (antibiotics) and refer patients if necessary.

Patient Education:

Counsel and educate all of your patients with diabetes regarding following points at the time of initiation of treatment and during follow up visits.

A. Nature of Disease:

- 1) Diabetes is a chronic condition during which blood sugar levels get high because of loss of control over them. These increased blood sugars affect all the major organs in the body and results in their dysfunction after years of living with the disease.
- 2) The cause of development of disease is not known, but certain people are more likely to develop diabetes: People having family history of diabetes, obese persons, persons with sedentary lifestyle, persons with hypertension, smokers, alcohol abusers, etc.
- 3) There are no signs or symptoms of diabetes in many patients for initial period of months or years. It is only when blood sugars are increased to higher levels that symptoms clearly appear to be recognised by the patient, such as increased urination, increased thirst, increased hunger, weight loss, etc.
- 4) After 05-10 years after the development on an average, effects of diabetes on vital organs start to show up. Eyes, kidneys, heart, nerves and blood vessels to these organs, etc. are most commonly affected.
- 5) Diabetes decreases functioning of person's immunity system and makes the patient prone to develop recurrent infections. Small infections may become complicated, requiring hospitalisation and long term treatment. Foot infections are especially common.
- 6) Patients with diabetes are more likely to develop hypertension and heart disease and serious conditions as stroke or heart attack may occur more frequently than non-diabetic persons. Therefore, early diagnosis and treatment is important to avoid or delay these complications.
- 7) Patient may develop hypoglycaemia (low blood sugar levels) intermittently either due to side effect of medicines or due to prolonged fasting. Symptoms as tremors, dizziness, sweating, irritation, blurring of vision, anxiety, etc. may appear within a period of minutes to hours. Patients should always be alert to these symptoms and immediately eat some sugar rich foods. Sugarcandy, biscuits will also do.

B. Therapy:

- 1) If not diagnosed earlier and treated adequately, diabetes would affect all major organs and result in gradual and progressive worsening of patient's condition. If treatment is started earlier, all the progressive organ dysfunction can be delayed for significant period of time and patient's quality of life can be improved.
- 2) Treatment of diabetes is essentially lifelong, as the control over blood sugar once lost would not be achieved without treatment. Patients must follow up at least once in every month to HWC and get blood sugar levels checked.
- 3) After starting the treatment, symptoms of hyperglycaemia disappear within few days to weeks, and this does not mean that diabetes is cured. Treatment is necessary to be continued for long term so as to keep blood sugar levels under good control.
- 4) Treatment with medicines alone will not effectively control blood sugar levels, but lifestyle changes have to be followed up by the patients.

5) Patients may also require simultaneous treatment for dyslipidaemia, hypertension and heart/kidney disease if any. This requires patient to take multiple medicines in a day and can sometimes cause confusion. Family members and caretakers should also be trained to take care of these patients.

C. Life style changes:

- 1) Do daily exercise for at least 30 minutes a day. Yoga and other light exercises can be started. HWC organises sessions for wellness activities and all persons with hypertension and diabetes are specially recommended to participate in these activities.
- 2) Decrease and gradually stop smoking and taking alcohol. They make the treatment less effective.
- 3) Diet must be specially taken care of; long hours of fasting and large meals should be avoided, as they lead to low blood sugar levels and high blood sugar levels respectively. Such fluctuations must be avoided. It is recommended to take small snacks and small meals after fixed intervals of few hours.
- 4) Avoid oily foods, junk foods and salty packed food. Low salt diet is recommended (daily salt intake less than 03 gram/day).
- 5) Weight reduction in obese patients is important part of management of diabetes. It directly helps to control blood sugar levels.
- 6) Diabetic patients are more prone to injuries and delayed or complicated wound healing. Therefore special care must be taken to avoid any minor / major injuries. Take care of nails, avoid keeping sharp long nails. Avoid working near fire stations/ hot/sharp objects.
- 7) Examine you own feet everyday at a fixed time to look for any cracks in the skin or injuries. Apply moisturising lotions to prevent dry skin and promote healing of minor cracks. Wear socks and shoes or MCR chappals/ sandals if available, preferable than simple chappals.
- 8) Always carry a sachet of table sugar, jaggary or sugar candy, chocolates in your pocket/ purse to avoid and treat hypoglycaemia.

Initiating the treatment:

Once the diagnosis of diabetes is confirmed, treatment is to be started by MO at PHC/CHC. Role of CHO in the beginning of treatment is to ensure complete assessment and lab tests regarding diabetes and its complications are completed and carefully recorded before starting patient on oral anti-diabetic medicines.

Initial evaluation must include all of the following things:

A] At HWC Level:

No.	Recording	Tick () where appropriate		
A.	History			
1.	- Presence of hyperglycaemic symptoms or asymptomatic diabetes (Increased urination, increased thirst, increased appetite, weight loss) - Presenting complaints	Yes	No	Specify _____ Specify _____
2.	- Other symptoms related to diabetic complications (symptoms of eye/kidney/ heart/blood vessels related complications) - Specifically ask for symptoms of pulmonary tuberculosis (Productive cough, fever)	Yes Yes	No No	Specify _____ Specify _____ _____
3.	Family history of diabetes, hypertension, heart attack, stroke, Tuberculosis	Yes	No	Specify _____
4.	Past history of Hypertension, heart/ kidney disease in patient	Yes	No	Specify _____
5.	Addictions: Bidi/ Cigarette Smoking Alcohol Others	Yes	No	Specify _____

B.	Exam		
1.	Measurements	Weight ___Kg	Height ___cm BMI =___Kg/M ²
2.	Vitals	Pulse ___/ min	BP ___/___mmHg
3.	Oral Exam: (Look for general oral hygiene, loose tooth, dental caries, etc.)		
4.	Sensations over feet (Mark the area with loss of sensations) - Touch - Pain - Temperature - Vibration	Right Sole 	Left Sole 
5.	Ulcers over feet (Mark the area of ulcer)	Right Sole 	Left Sole 
6.	Other/Systemic examination:		
C.	Lab Investigations	Finding	Normal Range
1.	RBS		<140mg/dl
2.	FBS PP ₂ BS		70-110mg/dl <140mg/dl
3.	Urine-Sugar Urine-Albumin (Urine dipstick tests)		Negative Negative

B] At PHC/CHC level, additional evaluation and tests should be done and recorded as follows:

No.	Recording	Results	Normal Range
B.	Exam:		
1.	Monofilament testing for neuropathy over feet		
2.	Visual acuity		
3.	Fundus of eye exam	Right Eye:	Left Eye:
C.	Lab:	Results	Normal Range
1.	HbA1c		≤5.6%
2.	Serum Creatinine		0.7-1.2mg/dl (Men) 0.9-1.4mg/dl (Women)
3.	Sr. LDL Cholesterol		<100mg/dl
4.	Sr. HDL Cholesterol		>40mg/dl (Men) >50mg/dl (Women)
5.	Sr. Triglycerides		<150mg/dl
6.	ECG		

After the evaluation and recording of all the findings, patient and his/her family member should be counselled and educated (as discussed above). Importance of lifestyle changes should be stressed on during counselling. You should encourage patient and the attendant to ask more questions, this will increase patient's confidence in you and about the treatment.

Patient's name and findings should be registered in appropriate NCD registers, NCD app, Family folder, etc. Team at HEC including ANM, MPW and ASHA of respective village should be informed about this patient and responsibilities be shared for following up of the patient during routine house to house or village visits.

Follow up of diabetic patient in OPD at HWC-SHC:

Strict adherence to regular treatment (including both lifestyle measures and oral anti-diabetic medicines) is essential to control and keep blood sugar levels within normal limits. Usually 01 monthly follow up of all patients with diabetes without complications at HWC-SHC is suggested.

Depending upon presence of associated illnesses or complications, some patients may need more frequent monitoring at HWC-PHC or CHC level. Few of such patients with complicated disease should be monitored and followed up at PHC or CHC level intermittently as suggested by MO. Most other patients would have no complications and can easily be monitored at HWC-SHC level only.

Random Blood sugar levels (RBS) should be checked using glucometer during every follow up visit of all diabetic patients. Target of RBS would be at least less than 140mg/dl during follow up visits.

Following scheme of evaluation would help you to monitor patients with DM at your OPD in HWC-SHC:

A] ASK:

- Q. Are there any new symptoms or complaints? If yes, then ask relevant history.
- Q. Do you have symptoms such as increased urination, increased thirst, increased appetite, weight loss, etc.? If yes, have these symptoms got better compared to your last visit?
- Q. Do you have any new symptoms such as fever, cough, burning micturition, straining for urination, toothache, etc.?
- Q. What is the schedule of taking medicines that you follow everyday? If not followed everyday, then what is the reason for poor compliance? If taking medicines regularly, then have you ever missed any dose of anti-diabetic medicines?
- Q. Do you smoke cigarettes/bidis or drink alcohol? Do you want to stop taking it?
- Q. Do you have food cooked with less amount of salt? What is your schedule of meals throughout a day? What type of work do you do on an average day?
- Q. What other lifestyle changes do you follow as were advised to you?

B] EXAMINE:

- General condition of patient
- Body Weight/BMI
- Pulse rate and Blood Pressure levels
- Swelling over feet, pallor
- Oral Examination
- Examination of both feet for sensations/ injuries
- Other relevant examination
- Blood tests: Random Blood Sugar level

C] ASSESSMENT:

Based on your evaluation as above, you will arrive at the point of time, when you will make decisions regarding continuity of the treatment.

- 1] **If Blood Sugar level is well controlled and patient has good compliance to treatment, has no new symptoms and no worsening of old symptoms and is able to perform all his routine functions/activities:** Continue same treatment, encourage patient to continue all lifestyle changes, congratulate and reassure your patient for having well controlled blood sugar levels.
- 2] **If Blood Sugar is well controlled (or not controlled) and patient has new symptoms (fever, localised or generalised infection) and has decreased overall functionality of the patient:** Evaluate according to presenting complaints of the patient, discuss with PHC-MO/ teleconsultant, if available and refer to PHC/CHC if patient is sick as per PHC-MO's suggestions.
- 3] **If patient has poor compliance to treatment:** Ask him/her in details about causes for not following up regularly, offer appropriate help, counsel and encourage patient to continue regular treatment. Inform your ASHA and MPW/ANM about this patient and ensure that team members visit his/her home to counsel and to encourage regular treatment. Discuss this with patient's family members.
- 4] **If Blood Sugar is not well controlled even with good compliance of patient to treatment:** Ask your patient about the timing and details of last meal taken and if any dose of medicines was skipped or not.
 If he/she is following lifestyle changes as advised, discuss with PHC-MO and if necessary or suggested by MO, then refer the patient to PHC/CHC for further evaluation and increasing the dose/ making revisions of the treatment plan.
 Some patients may need full dose of metformin or even addition of second anti-diabetic medicine to be prescribed to achieve good control.
- 5] **If Patient has both Hypertension and Diabetes and other associated complications (heart/kidney diseases):** Evaluate if both Blood Pressure and blood sugar levels are controlled and take help from PHC-MO/teleconsultant if either is poorly controlled.

D] ADVICE:

- Advise all your patients to continue low salt diet, reduce and stop tobacco and alcohol abuse and follow exercise/yoga/ wellness activities at your HWC. Advise taking small and frequent meals and snacks and avoid long gaps during meals or heavy meals 1-2 times/ day.
- Advise all your patients to continue regular treatment, as blood sugar levels would not be controlled with intermittent irregular treatment, resulting in increased risk of cardiovascular diseases and other complications.
- Advise all your patient to immediately contact the ASHA in their village for any new symptoms, and visit HWC.

Follow up of diabetic patient in Emergency Room:

A] Acute Severe Hyperglycaemia with complications:

Diabetic patients sometimes present with acute episodes of very high blood sugar levels (as high as >600mg/dl or even >1000mg/dl). This is an acute medical emergency situation which results from acute insulin deficiency from various reasons. Infections are the most common cause of such acute episodes. Lung infections (as pneumonia, bronchitis), Urinary tract infections, Skin infections, or secondary infection of wounds (diabetic foot), etc. are the commonly reported conditions. If untreated, this condition can be life threatening.

How should you diagnose it?

History of fever over 1-2 days is common and the dehydration or altered mental condition is developed over a period of few hours (04-08 hours).

Clinically patient is moderately or severely dehydrated (dry tongue, dry eyes, loss of skin elasticity) and may also have severe hypotension (with BP as low as <80/60mmhg) or even shock. Many patients will present with difficulty in breathing, rapid breathing (respiratory rate >24/minute). Some patients may be completely unconscious.

Such a patient requires immediate management at CHC/SDH/DH level hospital with IV fluids and inj. Insulin and electrolyte monitoring.

Your role is to take history relevant to above conditions and check blood sugar levels using glucometer. Blood sugar levels more than 500-600mg/dl associated with above clinical findings confirm the diagnosis.

How should you manage it?

Your role in the management at HWC is to confirm the diagnosis and refer the patient as quickly as possible.

Assess Circulation-Airway-Breathing of the patient and give necessary resuscitation. Keep patient on a flat bed/ surface, check SpO2 levels; give oxygen if SpO2 is less than 90%.

Before referral, an IV line (preferably large wide bore green IV cannula) must be connect to patient's forearm and 02 units of IV fluids Ringer's Lactate (2units = 1000ml) should be given fastly within 1st 01 hour. 3rd unit of Ringer lactate should be connected during transport.

Inform your MO at PHC/ CHC and also the referral hospital about arrival of the patient and coordinate for further care.

Prevention of infection or good compliance to medicines is the best way to protect patients from such severe conditions.

B] Hypoglycaemia:

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.

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

- Missing or skipping a meal (common among alcohol addicts, when they consume large amount of alcohol and skip 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

How should you diagnose it?

Symptoms of hypoglycaemia 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, or even seizures and unconsciousness.

All diabetic patients should be trained to identify symptoms of hypoglycaemia.

How should you treat it?

Hypoglycaemia can be treated by consuming a small amount of sugarrich 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), biscuits or toffee, etc.

Check the blood sugar once again after 15-20 minutes. If the blood sugar level, is still below 70 mg/dl, ask patient to take more sugar rich foods till symptoms are resolved.

If a patient reports multiple episodes of such hypoglycaemia, you should do evaluation of causes (consider wrong food habits and incorrect schedule of meals by patient or excessively high dose of anti-diabetic medicines).

CANCER

Learning Objectives:

After studying this chapter, you should be able to:

- 1) Understand what a cancer is and how it develops and presents clinically,
- 2) Identify early signs and symptoms of cancers at various sites and suspect cancer at possible sites,
- 3) Screen persons for cancer of oral cavity, breast and cervix.

Introduction:

Cancer may be regarded as a group of diseases characterised by (i) abnormal growth of cells, (ii) ability to invade adjacent tissues and even distant organs, and (iii) eventual death of affected patient when if tumour has progressed beyond a stage when it can be removed successfully. Cancer can appear at any site or tissue of the body and may involve any type of cell.

The tumour or lesion, at the site or organ where cancer originally started, is called as 'Primary Tumour'. When the cancer spreads to local or distant organ, the tumour developed at that site is called as 'Secondary Tumour'.

Problem statement:

The World Health Organization (WHO) has identified four major NCDs- Cardiovascular Diseases (CVD) such as heart attacks and stroke, Diabetes, Chronic Respiratory Diseases (Chronic Obstructive Pulmonary Diseases and Asthma) and Cancer. The list of NCDs is of course much longer than these four.

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.

Most common 05 sites of cancer in Indian men are lung, lip and oral cavity, stomach, rectum and throat. Among women in India, these are: Breast, cervix, rectum, ovary, lip and oral cavity. Of all cancers, we would focus on identification and screening of three most common cancers, which can be easily identified at village level in HWCs, these are: Oral cavity, Breast and Cervix.

Pathophysiology and Clinical Features:

As you already know, human body is made of different types of tissues and cells. With time some of the cells undergo aging process, die and get replaced by new cells of similar type. This is a continuous process at all organ and tissues throughout the lifetime.

Sometimes, due to various genetic or environmental or multiple other causes, and when a person is exposed to various cancer causing stimuli (such as cigarette smoking, tobacco chewing, industrial paints and gases, etc.), the new cells that appear at some sites are not exactly similar to the local tissue and have some differences of size, shape, functions, etc. These cells are cancerous cells; they multiply rapidly at same site and develop into a distinct mass. This result into abnormal functioning or even failure of the local organ/ site and person presents with signs and symptoms related to failure of these functions.

This type of cancerous development can occur at all of the tissues in our body. For our convenience to understand, let us divide cancers into those at visible/ superficial sites and those at deeper organs.

Cancer of skin, oral cavity, bones and joints, external genital organs, muscles, etc. appears as an ulcer or swelling or mass/tumour. Difference between cancerous and non-cancerous lesions can summarised

as in the table below. This is not a very accurate method to distinguish between the cancerous and non-cancerous/ benign lesions, but it gives a broad idea of how these lesions appear clinically.

No	Features	Cancerous Ulcer	Non-cancerous or benign Ulcers
1.	Size	Small in size to begin with, increases gradually over days/weeks	Usually small in size, less than 05-10mm, does not increase in size
2.	Shape and margins	Irregular shape with rough margins	Regular round or oval shape, straight and smooth margins of ulcer
3.	Depth	Initially it is a superficial ulcer, with time it grows big in size, increases in width and depth, involves deeper structures	Ulcer is mostly superficial and does not affect underlying deeper structures.
4.	Consistency	Ulcer is may painless to begin with, but later painful to touch, appears as a hard structure on touch	Painless or painful on touch, appears mostly as smooth and soft structure on touch
5.	Healing time	Cancerous ulcer does not heal at all, but gradually become larger in size and approaches to deeper structures	Ulcers heal within a week or two weeks, and may recur frequently at same site
6.	Bleeding	Not at the beginning but some time after its development, bleeding may appear spontaneously or on touch	Usually there is no bleeding

No.	Features	Cancerous Swelling/Tumour	Non-cancerous or Benign Swelling/Tumour
1.	Size	Small in size to begin with, increases gradually or even rapidly over days/ weeks	Usually size is small and does not change, but some benign tumours may increase in size gradually.
2.	Shape, Margins and Surfaces	Irregular shape with rough margins and surface	Regular round or oval shape, straight and smooth margins and surfaces
3.	Mobility	When cancer spreads to nearby tissues, the tumour gets fixed and can not be moved.	Benign tumours are usually mobile on side-to-side or in multiple directions, but they never involve/invade surrounding structures.
4.	Development of ulcer	Ulcer may develop over the swelling or tumour.	Ulcer does not develop over the tumour.
5.	Metastasis or distant spread	Cancer spreads to distant sites.	Benign tumours does not spread to local or distant sites.
6.	Blood supply	Rich blood supply	Poor blood supply

Cancers of deeper structures or internal organs are obviously difficult to identify as these lesions are neither visible nor palpable. The key to identify or suspect cancer at any of the deeper organs is to keep high clinical suspicion when a patient presents with high risk (or red flag) signs and symptoms. These are general and nonspecific features and do not necessarily point out cancer of a particular organ. Your role is to pick up these features and mobilise such patients to PHC or CHC level for further evaluation. These are as follows:

- 1) Change in bowel habits
- 2) Change in bladder habits.
- 3) A sore or ulcer that does not heal.
- 4) Unusual bleeding or discharge from any site.
- 5) Thickening or lump in the breast, neck, armpits, groins or elsewhere.
- 6) Indigestion or difficulty in swallowing.
- 7) Obvious change in a wart or mole.
- 8) Nagging cough or hoarseness.
- 9) Sudden and significant loss of weight within few days or weeks
- 10) Persistent pain at a site for long time, that does not go away

Oral Cancer:

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. If detected early, it can be treated successfully.

Risk factors for Oral Cancer:

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

- 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 mixture of betel quid and tobacco
- Alcohol intake
- Alcohol intake and consumption of tobacco together
- Poor oral hygiene
- Sharp teeth and ill-fitting dentures

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, lip, tongue or gums
- 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 or restriction in opening of mouth
- Difficulty in chewing or swallowing
- Difficulty or decrease in movements of the jaw or tongue
- Difficulty in tolerating spicy foods
- Bleeding or numbness of the tongue or other area of the mouth
- Constant bad breath
- Excessive salivation

Many of these symptoms can also be caused by causes other than cancer. Therefore it is very important to see a health professional or dentist if any of these conditions lasts more than 1-2 weeks so that the cause can be found and treated as earlier possible.

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 check-ups that include an exam of the entire mouth are important in finding oral cancers (and precancerous conditions) early. Refer to Annexure 06 for guidelines of Oral Visual Examination.

Every individual (woman or man) 30 years and above should be screened by a trained provider, at least once in five years. 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. 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.

All persons with any abnormal finding in oral examination should then be referred to medical officer at PHC/CHC/DH level for further evaluation.

Breast Cancer:

Breast cancer is 100 times more common among women than in men. If identified at early stage of development, breast cancer can be treated completely and successfully. Following are the risk factors:

Risk factors for Breast Cancer:

Following are the commonly found factors among female patients with breast cancer, although many women with these risk factors do not develop this disease. Thus it is difficult to predict exact risk of developing breast cancer among such women.

- Family History of breast cancer
- Early onset of menstrual period (menarche before age 12 years)
- Late age at first child birth (after age 30 years)
- No pregnancy- never having a full-term pregnancy
- Shorter duration of lactation or no breastfeeding
- Late menopause (after age 55 years)
- Previous treatment using radiation therapy
- Being overweight/obese especially after menopause
- Smoking, passive smoking, and alcohol abuse
- 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

Common warning signs of Breast Cancer:

- Lump in the breast or underarm area (armpit)
- Thickening or swelling of part of the breast
- Puckering or dimpling of breast skin
- Redness or flaky skin in the nipple, areolaof 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 for early detection and confirmation of diagnosis. 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 any trained health worker – preferably 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.

Screening of breast cancer with 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. This should be performed monthly at home to identify any changes in the breast. The practice of BSE empowers women to take responsibility for their health. However this is not a substitute for examination by a trained provider. 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).

The ASHA and ANM will educate the women in her area about the steps in BSE. You along with the ASHA will motivate the women to do BSE. See annexures 07 and 08 for CBE and BSE.

Cervical Cancer:

The cervix is the lower, narrow end or opening of the uterus. Human Papilloma virus (HPV) infection, which is a sexually transmitted infection, is the one of the important causes of cervical cancer. HPV prevalence increases with multiple sexual partners for both spouse, and poor genital hygiene of both partners.

Risk factors for cervical cancer:

Similar to breast cancer, it is difficult to calculate exact risk of development of cervical cancer in a woman. Following are some of the risk factors commonly seen among women with 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
- Early child birth- in women younger than 17 years
- Frequent child birth
- Weakened immune system such as HIV/AIDS

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 developed into advanced stage or have spread to surrounding or distant sites. 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
- Foul smelling vaginal discharge
- Unusual vaginal discharge tinged with blood
- Lower abdominal pain
- Unexplained weight loss
- Pain during urination

These symptoms 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.

Screening for Cervical Cancer:

Cervical cancer is one of the most successfully treatable cancers when detected at early stage as the chances of detecting pre-cancerous lesions are higher, when screening tests are utilised.

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.

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. Women should not be advised to undergo VIA testing during menstruation, pregnancy or within 12 weeks of delivery/ abortion.

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 cervical biopsy and further evaluation and management.

POPULATION BASED SCREENING OF NON-COMMUNICABLE DISEASES AT AB-HWC LEVEL:

Population based screening is a key component of the programme that is administratively implemented under the umbrella of Ayushman Bharat Health and Wellness Centre programme and the technical aspects of the implementation are managed under the NPCDCS programme under NHM.

To begin with, ASHAs/ANMs will enroll all the members of the family on a physical register or CPHC-NCD application / state specific application. ASHAs will then complete a Community Based Assessment Checklist (CBAC) for all women and men over 30 years in their population (we assume a normative population of 1000 in the service area of one ASHA), which will be done on an annual basis. This form is intended to capture data related to age, family history, treatment for any of the NCDs, waist circumference, and risky behaviours such as physical inactivity, use of/ or exposure to tobacco and alcohol use. There is some overlap also with the individual health card.

This form has questions that are allocated a score. A score of below four implies Low risk. ASHA/ANM are to be sensitized to the fact that a low risk score does not mean that the individual is to be exempted from screening, as NCDs could exist, even in the absence of risk factors. The scoring is not a point of elimination but a means to highlight risk factors. ANMs will enter the CBAC assessments on a physical form or CPHC-NCD application / state specific application.

In addition, the tool includes questions related to symptoms for cancer cervix, breast cancer, oral cancers, epilepsy and COPD, so that such cases may be identified and referred to appropriate centres.

The purpose of the form is to help the frontline workers use it as memory trigger, highlight the fact that the six variables in the tool increase the risk of these NCDs, and generally serve as a way of educating the community on these issues. The form will also be used as a key training instrument. The frontline workers would also be trained to understand that it is important for all those over 30 to be screened, but that the form helps them emphasise certain aspects of causation, prevention, and prioritization.

Once this exercise is completed, the ASHA will ensure that all those in this age category (age more than 30 years), particularly those who appear to be at risk for an NCD are informed of the benefits of being screened and actively mobilized to attend the screening day at a fixed location on a specific day.

Screening for cancers will take place once in five years, and for hypertension and diabetes it should be done annually.

The principles of screening at the community level are: that no individual should need to travel more than half an hour to be screened, that screening is conducted in a site where privacy is assured, that screening for all conditions, including cervical cancers (where Visual Inspection by Acetic Acid is to be undertaken) are carried out according to standard protocols., while Hypertension, Diabetes, oral and breast cancer screening can be offered in the outreach services at the village level, since the processes are relatively simple, and cervical cancer screening requires a space where speculum examinations and visualization with acetic acid can be done, including facilities for sterilization of equipment.

For cancers of the oral cavity and breast, the first level of referral is the CHC/ SDH/ DH and then to the DH/ Medical College for a biopsy for confirmed cases.

Screening process

On a fixed day in a week- Village or Sub centre based, depending upon the distance/ terrain, the ANM, assisted by the ASHA and members of the VHSNC, would screen for HTN, DM, and Oral Cancers, Cervical cancer (sub-centre or above) and Breast cancer.

The target population for screening is as follows:

- 1) All men and women over 30 years for Oral Cancer, Hypertension and Diabetes Mellitus;
- 2) All women over 30 years for Cervical and Breast Cancer

ANMs to enter the screening details on a physical form or CPHC-NCD application / State applications.

Key tasks on the screening day include:

- 1) Community awareness and active mobilization,
- 2) Organising the venue,
- 3) History taking,
- 4) Management of patient flow,
- 5) Recording,
- 6) Feedback to patients,
- 7) Monitoring of already diagnosed cases,
- 8) And referral advice.

This will need a coordinated team effort: CHO, ANM, ASHA, ASHA facilitator, AWW, and volunteers. Such volunteers could be members of the VHSNC/MAS or adolescent groups, or local organizations.

CHO will play a key role in:

- Provide IEC and awareness to communities and individuals on NCDs and risk factors
- Facilitating ASHAs and ANMS to enrol and screen the population for common NCDs
- Initiate life style modifications in individuals at low risk, but are susceptible to NCDs
- Provide support to ANMs in triggering appropriate referrals of suspected patients
- Provide clinical supervision of the follow-up cases for patients initiated on treatment at PHC or higher level facilities.
- To facilitate proper recording of the individual and clinical data and report the same as required under the NPCDCS and Ayushman Barat Programmes.

Community Based Assessment Checklist (CBAC) Form for Early Detection of NCDs and Tuberculosis (TB)

General Information	
Name of ASHA:	Village/Ward:
Name of MPW/ANM:	Sub Centre:
	PHC/UPHC:
Personal Details	
Name:	Any Identifier (Aadhar Card/ any other UID – Voter ID etc.):
Age:	State Health Insurance Schemes: Yes/No If yes, specify:
Sex:	Telephone No. (self/family member /other - specify details):
Address:	
Does this person have any of the following: visible defect /known disability/Bed ridden/ require support for Activities of Daily Living	If yes, Please specify

Part A: Risk Assessment				
Question	Range		Circle Any	Write Score
1. What is your age? (in complete years)	0 – 29 years		0	
	30 – 39 years		1	
	40 – 49 years		2	
	50 – 59 years		3	
	≥ 60 years		4	
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? <i>(Daily minimum 30 minutes per day – Five days a week)</i>	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	
Total Score				
Every individual needs to be screened irrespective of their scores. A score above 4 indicates that the person may be at higher risk of NCDs and needs to be prioritized for attending the weekly screening day				

Part B: Early Detection: Ask if Patient has any of these Symptoms			
B1: Women and Men	Y/N		Y/N
Shortness of breath (<i>difficulty in breathing</i>)		History of fits	
Coughing more than 2 weeks*		Difficulty in opening mouth	
Blood in sputum*		Any ulcers in mouth that has not healed in two weeks	
Fever for > 2 weeks*		Any growth in mouth that has not healed in two weeks	
Loss of weight*		Any white or red patch in mouth that has not healed in two weeks	
Night Sweats*		Pain while chewing	
Are you currently taking anti-TB drugs**		Any change in the tone of your voice	
Anyone in family currently suffering from TB**		Any hypopigmented patch(es) or discolored lesion(s) with loss of sensation	
History of TB *		Any thickened skin	
Recurrent ulceration on palm or sole		Any nodules on skin	
Recurrent tingling on palm(s) or sole(s)		Recurrent numbness on palm(s) or sole(s)	

Cloudy or blurred vision		Clawing of fingers in hands and/or feet	
Difficulty in reading		Tingling and numbness in hands and/or feet	
Pain in eyes lasting for more than a week		Inability to close eyelid	
Redness in eyes lasting for more than a week		Difficulty in holding objects with hands/ fingers	
Difficulty in hearing		Weakness in feet that causes difficulty in walking	
B2: Women only	Y/N		Y/N
Lump in the breast		Bleeding after menopause	
Blood stained discharge from the nipple		Bleeding after intercourse	
Change in shape and size of breast		Foul smelling vaginal discharge	
Bleeding between periods			
B3: Elderly Specific (60 years and above)	Y/N		Y/N
Feeling unsteady while standing or walking		Needing help from others to perform everyday activities such as eating, getting dressed, grooming, bathing, walking, or using the toilet	
Suffering from any physical disability that restricts movement		Forgetting names of your near ones or your own home address	
<i>In case of 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</i>			
<i>*If the response is Yes- action suggested: Sputum sample collection and transport to nearest TB testing center</i>			
<i>** If the answer is yes, tracing of all family members to be done by ANM/MPW</i>			

Part C: Risk factors for COPD

Circle all that Apply

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

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.

Part D: PHQ 2

Over the last 2 weeks, how often have you been bothered by the following problems?		Not at all	Several days	More than half the days	Nearly every day
1.	Little interest or pleasure in doing things?	0	+1	+2	+3
2.	Feeling down, depressed or hopeless?	0	+1	+2	+3
Total Score					
<i>Anyone with total score greater than 3 should be referred to CHO/ MO (PHC/UPHC)</i>					

RISK FACTORS FOR NON-COMMUNICABLE DISEASES

(For Hypertension and Diabetes)

The exact cause for development of HTN or DM is difficult to confirm, as multiple factors including genetic, environment, physiological, etc. play role in their development. Some factors have been identified as high risk factors that are commonly found to be associated with development of HTN and DM. Some of them are modifiable with lifestyle changes and treatment, while some others are not modifiable.

Hypertension and Diabetes in themselves are risk factors for one another. Diabetics are more likely to develop HTN and associated CVDs and vice versa.

Adults with middle age group and elderly have increasingly more risk as age advances, particularly males are at risk more than females of same age group.

Modifiable risk Factors	Non Modifiable Risk Factors
Obesity	Age
Smoking and Alcohol Abuse	Male Gender
Lack of physical activity/Sedentary Lifestyle	Family history
Unhealthy diet	
Dyslipidaemia	

World Health organization/ International Society of Hypertension (WHO/ISH) risk prediction charts

These charts provide approximate estimates of cardiovascular disease (CVDs) risk in people who do not have established coronary heart disease, stroke or other atherosclerotic disease. They are useful as tools to help identify those at high cardiovascular risk, and to motivate patients, particularly to change behaviour and, when appropriate, to take antihypertensive, lipid-lowering drugs and aspirin.

How do you use the charts to assess cardiovascular risk?

- 1) If blood cholesterol cannot be measured due to resource limitations, use the charts that do not have total cholesterol.
- 2) Before applying the chart to estimate the 10-year cardiovascular risk of an individual, the following information is necessary:
 - Presence or absence of diabetes
 - Gender
 - Smoker or non-smoker
 - Age
 - Systolic blood pressure
 - Total blood cholesterol (if in mg/dl divide by 38 to convert to mmol/l)
- 3) Once the above information is available proceed to estimate the 10-years cardiovascular risk using the charts as follows.

Step 1: Select the appropriate chart depending on the presence or absence of diabetes

Step 2: Select male or female tables

Step 3: Select smoker or non-smoker boxes

Step 4: Select age group box (if age is 50-59 years select 50, if 60-69 years select 60 etc.)

Step 5: Within this box find the nearest cell where the individual's systolic blood pressure (mm Hg) and total blood cholesterol level (mmol/l) cross. The colour of this cell determines the 10-year cardiovascular risk.

Practice points:

Please note that CVD risk may be higher than indicated by the charts in the presence of the following:

- already on antihypertensive therapy
- premature menopause
- approaching the next age category or systolic blood pressure category
- obesity (including central obesity);
- sedentary lifestyle;

- family history of premature coronary heart disease (CHD) or stroke in first degree relative (male < 55 years, female < 65 years);
- raised triglyceride level (>2.0 mmol/l or 180 mg/dl);
- low HDL (high density lipoprotein) cholesterol level (< 1 mmol/l or 40mg/dl in males, < 1.3 mmol/l or 50 mg/dl in females);
- raised levels of C-reactive protein, fibrinogen, homocysteine, apolipoprotein B or Lp(a), or fasting glycaemia, or impaired glucose tolerance;
- microalbuminuria (increases the 5-year risk of diabetics by about 5%)
- raised pulse rate.
- socioeconomic deprivation

(* SEAR D People include people of following countries: Bangladesh, Bhutan, Republic of Korea, India, Maldives, Myanmar, Nepal)

Schedule and strategy for laboratory investigations during follow up of patients with DM at HWC level:

No.	Tests	At the time of diagnosis of DM	During follow up visits for routine diabetes care			
			Patients with good sugar control & no complications	Patients with poor sugar control but no complications	Patients with organ failure and complications due to DM (Recurrent UTI, Kidney Diseases, Diabetic foot, Heart Failure, Hypertension, etc.)	Patients with other systemic illnesses (Heart Attack, Stroke, Kidney failure, Liver diseases, etc.) or associated with infections (TB, HIV, etc.)
A. At HWC level						
1.	Blood sugar levels using Glucometer (RBS)	FBS/PP ₂ BS needed to be done to confirm the diagnosis	All follow up visits	All follow up visits	All follow up visits	All follow up visits
2.	Urine Sugar and Urine Albumin levels	Should be done	1-2 times/ year	06 monthly	3-4 monthly or as recommended by MO	3-4 monthly or as recommended by MO
3.	Blood Pressure to rule out or monitor HTN	Should be done	All follow up visits	All follow up visits	All follow up visits	All follow up visits
4.	Examination of Feet to rule out diabetic foot and assess any new or non-healing wounds	Should be done	Once monthly by CHO and daily by patient	Once monthly by CHO and daily by patient	Once monthly by CHO and daily by patient	Once monthly by CHO and daily by patient
5.	Psychosocial care, including evaluation for depression, anxiety	Should be done	On every visit or at least once in 3-4 months	On every visit or at least once in 3-4 months	On every visit	On every visit
B. At PHC/CHC level						
1.	Serum Creatinine	Should be done within initial 1-3 months after diagnosis of uncomplicated DM, whenever possible and immediately for complicated DM	At least once in every year	At least once in every year or when indicated as per clinical condition of patient	Once in every 06 months or as recommended by physician	As recommended by physician
2.	Urine Analysis	Same as above	At least once in every year	At least once in every year or when indicated as per clinical condition of patient	Once in every 06 months or as recommended by physician	As recommended by physician

3.	Lipid Profile testing	Same as above	At least once in every year	At least once in every year or when indicated as per clinical condition of patient	Once in every 06 months or as recommended by physician	As recommended by physician
4.	HbA1c	Same as above	At least once in every year	Once every 3-4 monthly	Once every 3-4 monthly	Once every 3-4 monthly
5.	Eye examination including ophthalmoscopy fundus examination to rule out retinopathy	Same as above, If not available then, send to DH/medical college on a day suitable for the patient	At least once in every year	At least once in every year	As recommended by MO	As recommended by MO
6.	Sensory charting using monofilament testing to assess or rule of neuropathy or assess its progression	Should be done	Feet exam on every visit at PHC/CHC & sensory charting at least every 06 monthly	Feet exam on every visit at PHC/CHC & sensory charting at least every 06 monthly	Feet exam on every visit at PHC/CHC & sensory charting at least every 06 monthly	Feet exam on every visit at PHC/CHC & sensory charting at least every 06 monthly
7.	Psychosocial care, including evaluation for depression, anxiety, etc.	Should be done	On every visit at PHC/CHC	On every visit at PHC/CHC	On every visit at PHC/CHC	On every visit at PHC/CHC
C. At DH/Medical College level						
1.	Eye examination including ophthalmoscopy fundus examination to rule of retinopathy	Should be done at DH, if not available at PHC/CHC	At least once in every 1-2 years at DH, if not available at PHC/CHC	At least once in every 1-2 years at DH, if not available at PHC/CHC	As recommended by MO	As recommended by MO
2.	Sensory charting using monofilament testing to assess or rule of neuropathy	Should be done at DH, if not available at PHC/CHC	Sensory Charting at least once in every year at DH, if not available at PHC/CHC	Sensory Charting at least once in every year at DH, if not available at PHC/CHC	Sensory Charting at least once in every year at DH, if not available at PHC/CHC	Sensory Charting at least once in every year at DH, if not available at PHC/CHC
3.	ECG and other assessment as indicated to rule out hypertension related complications and CVDs	Should be done for patient with both DM and HTN at time of diagnosis, or with other complications	Not essential	Not essential	As prescribed by the specialist	As prescribed by the specialist
4.	Psychosocial care, including evaluation for depression, anxiety	Should be done at all levels, where diagnosis is made.	Should be done at HWC/ PHC/ CHC level only	Should be done at HWC/ PHC/ CHC level only	During all the visits to DH, or as prescribed by the specialist	During all the visits to DH, or as prescribed by the specialist

Clinical Presentations of Stroke and Heart Attack

Stroke:

A stroke, sometimes called a “brain attack”, occurs when blood flow to an area in the brain is cut off. The cells in that part of brain get severely injured and die from lack of oxygen and glucose supply which is needed for them to survive. If a stroke is not treated early, permanent brain damage or death can result.

This can happen either when a blood vessel in the brain or neck is blocked or when there is bleeding from any of the blood vessels in the brain.

The signs and symptoms of stroke depend upon it's the causative factor and the part of the brain affected. Some of the major signs and symptoms are reported by a stroke patients include:

- Sudden feeling of weakness or numbness of the face, arm or leg on any one limb or on one side of the body.
- Loss of vision or dimming (like a curtain falling) in one or both eyes.
- Loss of speech, difficulty in talking or understanding what others are saying, deviation of mouth to one side.
- Sudden, severe headache with no known cause.
- Fainting or unstable walking usually combined with another symptoms like light headedness, dizziness and confusion.
- Some patients may have altered sensorium or unconsciousness.

Heart Attack:

A heart attack (myocardial infarction) occurs when the blood supply to muscles of heart is impaired due to blockage in one of the blood vessels supplying to the heart.

Chest pain is the most important of all symptoms, but in some patients heart attack can occur silently without severe symptoms. Chest pain due to heart attack needs to be differentiated from chest from other causes. Following are the features of typical chest pain associated with heart attack.

Onset– Chest pain in heart attack is typically gradual to acute in onset, although the intensity of the discomfort may wax and wane.

Provocation and palliation– Ischemic pain is generally provoked by an activity, such as exercise or even walking upstairs or any other activity.

Quality– Ischemic pain is often characterized more as a discomfort than pain, and it may be difficult for the patient to describe the pain. Terms frequently used by patients include squeezing, tightness, pressure, constriction, crushing, strangling, burning, heartburn, fullness in the chest, band-like sensation, knot in the centre of the chest, lump in throat, ache, heavy weight on chest, etc.

It is generally not described as sharp, fleeting, knife-like, stabbing, or like “pins and needles”.

Radiation– Ischemic pain often radiates to other parts of the body including the upper abdomen, shoulders, arms (upper and forearm), wrist, fingers, neck and throat, lower jaw and teeth (but not upper jaw), and not infrequently to the back (specifically the interscapular region).

Site– Ischemic pain can be felt at the centre of chest just behind sternal bone, but generally not felt in one specific spot. Rather it is perceived as diffuse discomfort that may be difficult to localize and the patients often indicate the entire chest by covering the area with palm of hand, rather than localizing it to a specific area by pointing a single finger.

Time course – Duration of pain is variable, but commonly more than 30 minutes.

Associated Symptoms – Excessive sweating, cold limbs, breathing difficulty may also be present. Giddiness, nausea, vomiting or impaired consciousness could present occasionally.

Symptoms associated with the highest relative risk of heart attack include radiation to an upper extremity, particularly when there is radiation to both arms, and pain associated with increased sweating or with nausea and vomiting.

SCREENING AND CARE FOR DIABETIC FOOT:

Screening exam of Foot:

Diabetes is commonest cause of foot infections requiring amputations of toes or foot. Therefore, all patients with diabetes must be examined for any injury, neuropathy, deformity or infections during all follow up visits at HWC.

Symptoms commonly associated with neuropathy of foot are loss of protective sensations around foot (loss of touch, pain or temperature sensations), spontaneous loosening out of chappals from feet during walking, recurrent injuries to feet, etc. But due to loss of sensations, many patient often do not notice any of the symptoms or signs in time or they may ignore the signs stating them as non-important.

Thus it is better to make a habit to examine feet during follow up visit and to educate the patient to examine own feet everyday at home.

During follow up in OPD, get the patient wash both feet before being examined by you. Thoroughly inspect top, sole, all sides and areas in between the toes for presence of any skin injuries/ cracks.

Also note if any toes or joints in the foot have become stiff and/or deformed. These areas are usually more prone of developing ulcers.

Care of wounds over feet:

A thorough evaluation of any ulcer is critical to plan management. An adequate description of ulcer characteristics, such as size, depth, appearance, and location, is important for mapping the progress during treatment.

You should be able to train patients and their caretakers to take care of wounds/ ulcers over foot including wound cleansing and dressing at home.

Limb-threatening infections requiring hospitalised care and amputation can be defined by following 04 criteria; presence of any one of them should be informed to MO at PHC/CHC and patient be referred as earlier possible to nearest hospital with surgeon.

1. Cellulitis extending beyond 2 cm from the ulcer perimeter,
2. Deep abscess and non-healing foot ulcer/ wound for more than 01-02 weeks,
3. Osteomyelitis i.e. infection of foot ulcer reaching upto bones,
4. Critical ischemiawith black discoloration and foul smelling from wounds

Patient Education 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 or moisturising lotions 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 to be examined by the doctor.

ORAL VISUAL EXAMINATION

Tools:

- 1) Wooden spatula/ Mouth Mirror
- 2) Gloves
- 3) 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 separate 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:

Ask the person to rinse the mouth properly with water before starting the examination

Take help from any volunteer to hold the torch while you are conducting the oral examination.

If the person is wearing complete or partial denture, ask her/him to remove it and open her/his mouth wide open

Look for any swelling, growth, ulcerations, scars, sinus, fistula over face and neck region externally.

Examine the border of both the lips (lip-line) with lips closed and also with mouth slightly open

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 one above another) in the mouth and assess the extent of mouth opening.

Lips: Examine the outer and the inner part/ lining of the lips along with borders. The inner part of the lip will be examined by gently turning the lip out. The inner lining normally should appear wet and shiny. Inspect lips for presence of ulcers, swelling and crusts and hold lip with index finger and thumb to palpate whole of the inner and outer surfaces for any hardness or swelling.



Cheeks:

Examine the inside of the cheeks, using two mirrors to retract the inner part of the cheek to one side. You must inspect all of the area from front to back including both upper and lower grooves between cheek and gums, area posterior to last molar tooth. The gloved index finger is used to reflect inner part of lip and to palpate the inside of cheek for any swelling or hardness. Examine both sides one by one for presence of any red-white patches over mucosa, bleeding, ulcers, hardness, etc.





Gums:

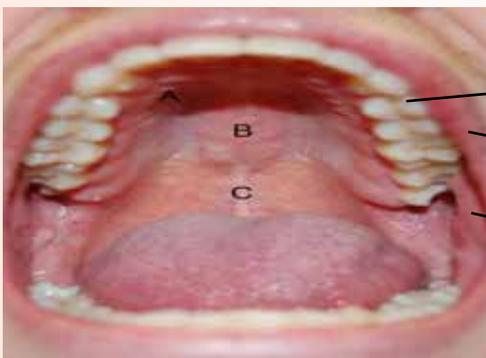
Inspect the gingiva and gingiva-buccal sulcus (groove between gums and cheek mucosa) for any ulcer, discharge, bleeding, swelling, etc. and palpate with index finger for any unusual hardness or tenderness. Gingiva should also be examined from inner side by mobilising the tongue.



Along with examination of surfaces of tongue, also look for any restricted movements of tongue.

Palate or Roof of mouth:

Examine the hard and soft palates by using mouth mirror. It is usually pink in color. It is normally firm and has a corrugated pattern in anterior portion. Examine swelling, ulcer or hardness.



Corrugated pattern on Anterior Portion

Hard Palate

Soft Palate

Teeth:

Examine teeth over both upper and lower jaw on right and left sides for any abnormal growth or ulcer at the base of any tooth, any foul smelling mucous or bloody discharge or loosening of tooth.

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.

Self-examination of Oral Cavity:

Steps to undertake self-examination of the oral cavity is as follows. Ask the person to:

- 1) Rinse the mouth with water and stand before a mirror in adequate light.
- 2) Look in the mirror for any abnormality in the mouth
- 3) 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.

BREAST SELF-EXAMINATION

Steps of BSE:

Step 1: Stand in front of the mirror with both arms relaxed and besides your body.

What to look for:

Any change from the usual size, shape, and colour of skin,

Any visible distortion or swelling of the breast

Dimpling, puckering, or bulging of the skin

A nipple that has changed position or an inverted nipple (pushed inward instead of sticking out) or abnormal discharge (mucous or blood) from nipple

Redness, soreness, rash, or swelling

Step 2: Keep both of your arms and press firmly over hips look for the same changes if any one of them is present.

Step 3: Raise both your arms above the head, press your head by hands from behind and look for the same changes if any one of them is present.

Step 4: Lie down on your back and using palms and fingers of you hand, touch, press and examine your breasts on both sides.

What to look for?

Any lump, swelling tumour, hardness, tenderness superficially just below the skin or deeper within the breast

How to do it?

Use your right hand to examine left breast and left hand for right breast.

Keep your palm and fingers flat on the breast and feel for the above changes over whole area of breast, from top to bottom, (from your collarbone to the top of the abdomen) and from side to side (from the armpit to cleavage). Also examine area around nipple and areola carefully for similar changes. Squeeze the nipple and look for any abnormal discharge. Repeat all these steps of the examination on breast over other side.

Repeat the examination and now do it in circular fashion, from outer to inner towards nipple.

Repeat the examination in sitting position.

Step 5: Follow step 04 while taking bath.

Many women find that the easiest way to feel their breasts is when their skin is wet and slippery.

CLINICAL BREAST EXAMINATION

Things to remember 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 calm and 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.

Examination should preferably be done by a lady health worker, CHO. If examiner is male, then there must be a female attendant standing beside the patient during the examination.

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

A] Inspection

Let the lady sit upright on the examination table with her arms kept relaxed by the sides. 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.

Note any difference in shape, size, nipple or skin puckering or dimpling. 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. 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 and then press her hands on her hips so as to contract her chest wall (pectoral) muscles. 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 help to show up any skin puckering or dimpling if either is present. Then have the woman lean forward to see if her breasts hang evenly.

B] 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. Place a clean sheet or drape over the breast that you are not examining. Place the woman's arm over her head, on the side that you are going to examine.

Use "Dial of clock method" for palpation, first use the palmar and finger pads of the middle three fingers to palpate the entire breast, in overlapping circular motions, one area at a time. Put light pressure for palpation of superficial breast tissue and press firmly to examine deeper tissue within the breast.

Using the pads of your three middle fingers, palpate the breast using the spiral technique. Start at the top outermost edge of the breast.

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.

Using the thumb and index finger, gently squeeze the nipple of the breast. 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, it may be due to cancer, infection or a benign tumour or cyst.

Repeat these steps for the breast on other side.

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. 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 entirely normal, tell her that 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). Properly document the detailed findings in the screening form with date of next follow up & hand over to the women.

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 would be about 6 to 8 minutes.

References

1. Operational Guidelines for Prevention, Screening and Control of Common Non-Communicable Diseases, MoHFW
2. Operational Framework for Management of Common Cancers, MoHFW

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