



Module for Medical Officer

Population-based screening for Non-Communicable Diseases



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Abbreviation

ACEI	Angiotensin-converting enzyme inhibitor
ADA	American Diabetes Association
AF	ASHA Facilitator
ANM	Auxillary Nurse Midwife
ARB	Angiotensin II receptor blockers
ASHA	Accredited Social Health Activist
AWW	Anganwadi worker
AYUSH	Ayurveda Yoga Unani Siddha & Homeopathy
BB	Bundle branch block
BCC	Behaviour Change Communication
BMI	Body Mass Index
BP	Blood Pressure
BPHC	Block Primary Health Centre
CAD	Coronary Artery Disease
CBAC	Community Based Assessment Checklist
CBE	Clinical Breast Examination
CCB	Calcium channel blocker
CHC	Community Health Centre
CKD	Chronic Kidney Disease
COPD	Chronic Obstructive Pulmonary Diseases
CT scan	Computer Tomography scan
CVD	Cardio-vascular diseases
DBP	Diastolic Blood Pressure
DH	District Hospital
DM	Diabetes Mellitus
ECG	Electro-cardiogram
ECHO	Echocardiogram
FBS	Fasting Blood Sugar
FRU	First Referral Unit
HbA1C	Glycosylated Haemoglobin
HDL	High density lipoprotein
HF	Heart Failure
HT	Hypertension
HWC	Health & Wellness Centre
ICMR	Indian Council of Medical Research
IEC	Information, Education & Communication
IHS	International Society for Hypertension
IV	Intravenous

KFT	Kidney Function Tests
LDL	Low density lipoprotein
LFT	Liver Function Tests
LHV	Lady Health Visitor
MAS	Mahila Arogya Samiti
MO	Medical Officer
MRI	Magnetic Resonance Imaging
NCD	Non-communicable diseases
NPCDCS	National Programme for Prevention and Control of Cancer, Diabetes, CVDs & Stroke
NPR	National Population Register
NSAIDS	Non-steroidal Anti-inflammatory Drugs
OVE	Oral Visual Examination
PAD	Peripheral Arterial Disease
PBS	Population based screening
PHC	Primary Health Centre
PPBS	Post Prandial Blood Sugar
RBS	Random Blood Sugar
RBSK	Rashtriya Bal Swasthya Karyakram
RNTCP	Revised Nation Tuberculosis Control Programme
RSBY	Rashtriya Swasthya Bima Yojana
SBP	Systolic Blood Pressure
SC	Sub-centre
SDH	Sub District/Divisional Hospital
SECC	Socio-Economic Caste Census
SN	Staff Nurse
SNO	State Nodal Officer
T1DM	Type 1 Diabetes Mellitus
T2DM	Type 2 Diabetes Mellitus
UID	Unique Identification
USG	Ultrasound
VHND	Village Health and Nutrition Day
VHSNC	Village Health Sanitation & Nutrition Committee
VIA	Visual Examination with Acetic Acid
WC	Waist Circumference
WHO	World Health Organization
WHR	Waist Hip Ratio

Foreword

Non Communicable diseases (NCDs) are currently the leading cause of preventable death & disability in India. Among NCDs, Cardiovascular diseases (CVDs), Diabetes, Cancer, Chronic Obstructive Pulmonary Disease (COPD) account for 60% of mortality in India.

The National Programme for prevention and Control of Cancer, Diabetes, CVDs and Stroke (NPCDCS) was launched in 2010 with the objectives *inter alia* to prevent & control NCDs through behaviour change & lifestyle modifications; providing early diagnosis & management; capacity building at various level of health care; and establishing palliative and rehabilitative care.

On 1st May 2013, National Urban Health Mission (NUHM) was launched as a sub-mission of an over-arching National Health Mission (NHM), with National Rural Health Mission (NHM) being the other sub-mission of NHM. The NPCDCS integrated with NHM framework for optimization of scarce resources and provision of seamless services to the end customer / patients as also for ensuring long term sustainability of interventions. Thus, the institutionalization of NPCDCS at district level within the District Health Society, sharing administrative and financial structure of NHM became a crucial programme strategy for NPCDCS.

There are evidences that presently large population remains uncovered under the programme due to low level of awareness among people, poor health seeking behaviour, non-access to health services to the marginalized population (as the interventions under the programme start at Community Health Centre level). **To improve the reach of the programme, new interventions like Population Based Screening, decentralized treatment services to primary health care level and regular follow up of the NCD cases put on treatment, by ANM at the sub- centre level are being added.**

Module for medical officer has been prepared which has role of MO in Population based Screening, standardised NCD treatment protocol along with guidelines for referring the cases with complication and co-morbidities to higher facilities along with the monitoring formats and checklist.

I urge the states to utilise the module for training the medical officers posted at rural/urban PHC or those under Municipal Corporation to enhance their knowledge & skills for effective management of NCDs which in turn will help to achieve the target of reducing premature mortality due to NCD by 25% by 2025

The module can also be used by MOs/GPs as self learning resource to contribute towards NCDs prevention and Control.



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(S. Venkatesh)

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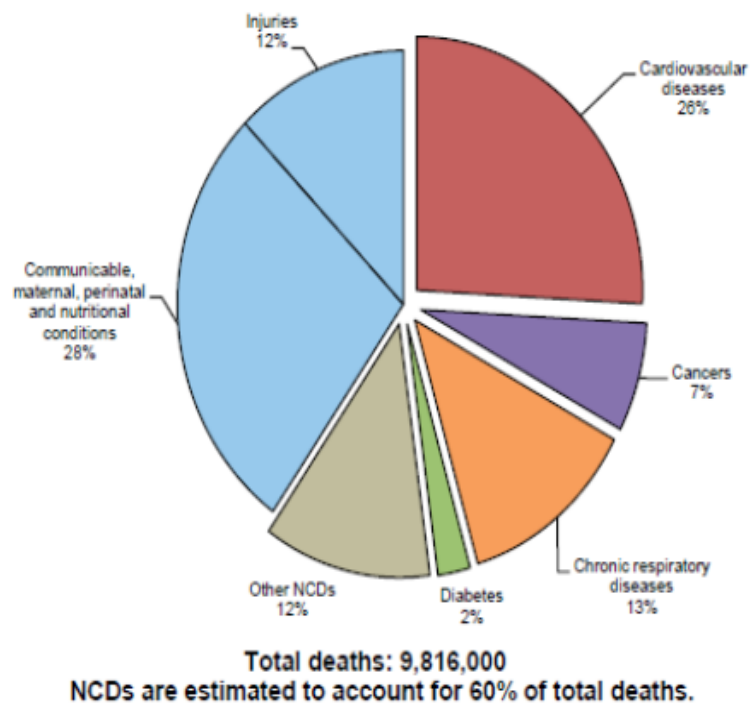
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Chapter 1: Overview of the NPCDCS programme

Magnitude of NCD Burden in India

Non-communicable Diseases (NCDs) are currently the leading cause of preventable deaths and disability in India. The four identified major NCDs are Cardiovascular Diseases (CVD) such as heart attacks and stroke, Diabetes, Chronic Respiratory Diseases (Chronic Obstructive Pulmonary Diseases and Asthma) and Cancer. They are the leading cause of death, accounting for over 60% of premature mortality, placing them ahead of Communicable diseases, Maternal, Prenatal, and Nutritional conditions (WHO 2014). According to WHO's NCD Country Profile for India, it is estimated that the mortality profile due to NCDs is as follows:

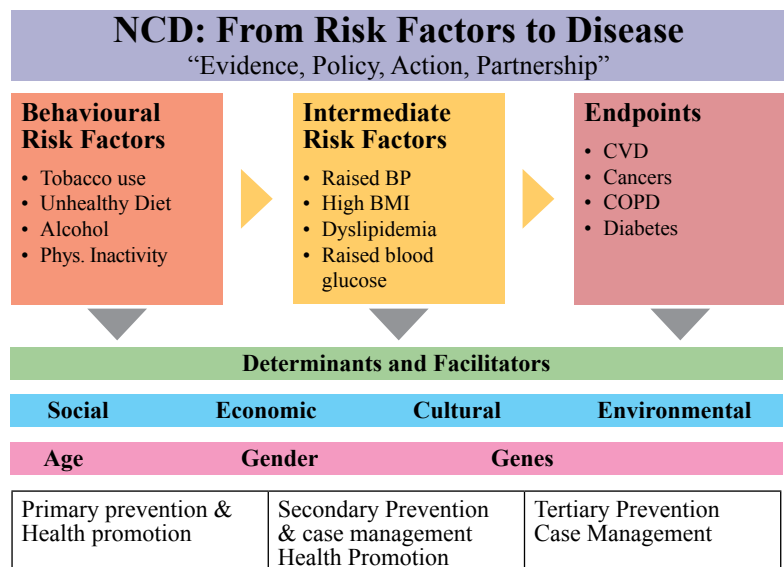
Figure 1.1: Proportional Mortality (% of total deaths, all ages, and both sexes)



Risk factors for NCDs

Risk factors are cumulative and operate on a life course perspective. **It is important to note that all these risk factors are amenable to modification through lifestyle changes.** In nutshell, today's risky behaviours are tomorrow's risk factors. Today's risk factors are tomorrow's disease. **Thus, primary and secondary prevention of chronic diseases and their common risk factors provide the most sustainable and cost-effective approach to chronic disease prevention and control.**

Figure 1.2 : NCDs Risk factors to Diseases



Lifestyle Modification: an Anchor sheet for prevention and control for Risk for NCDs

Diet

- Increase intake of green leafy vegetables and fresh fruits (at least 400gms per day).
- Consume less salt (<5gms per day); avoid adding/sprinkling salt to cooked and uncooked food.
- Preparations which are high in salt and need to be moderated are: Pickles, chutneys, sauces and ketchups, papads, chips and salted biscuits, cheese and salted butter, bakery products and dried salted fish.
- Steamed and boiled food should be preferred over fried food.
- Avoid eating fast/junk foods and aerated drinks. Instead of fried snacks, eat a fruit.
- In practice, it is best to use mixture of oils. Either buy different oils every month or cook different food items in different oils.
- Oils which can be mixed and matched are mustard oil, soya bean oil, groundnut oil, olive oil, sesame oil, and sunflower oil.
- Ghee, vanaspati, margarine, butter and coconut oil are harmful and should be moderated.
- For non-vegetarians, more of fish and chicken. They should not be fried. Red meat should be consumed in small quantities and less frequently

Physical Activity

- Physical activity is a key determinant of energy expenditure.
- Regular exercise is important for promoting weight control or weight loss.
- Exercise regularly (moderate to vigorous) for 5-7 days per week; start slowly and work up gradually
- At least 30 minutes (accumulated) of physical activities per day for cardiovascular disease protection.
- 45 minutes/ day (accumulated) for fitness.
- 60 minutes/ day (accumulated) for weight reduction. Discourage spending long hours in front of TV. Encourage outdoor activities like cycling, gardening etc.
- Yoga & Meditation : A holistic life style which includes Asanas and all other components of healthy life style like low fat vegetarian diet , stress management, tobacco avoidance and physical exercise

Weight Control

All individuals who are overweight or obese should be encouraged to lose weight through a combination of a low calorie diet and dynamic physical activity. Overweight or obesity is assessed by measuring body mass index (BMI), which is calculated as weight in kg/height in meter². For Indian population BMI 18.5 to 22.9 is normal,, 23 to 24.9 is considered as overweight and BMI of >25 is considered as obesity. Waist circumference is also an important measurement of central obesity and it should be <90 cm for men and <80 cm for women. Another measure of central obesity is Waist Hip Ratio (WHR). Normal WHR is <0.85 for women and <0.95 for men.

Please Note: Patients with uncontrolled hypertension ($\geq 200/\geq 110$ mm Hg), uncontrolled diabetes (FBS ≥ 250 mg/dl), diminished vision due to diabetic/hypertensive retinopathy or for other reasons, recent myocardial infarction/unstable angina or stroke (within 6 weeks), and with uncontrolled angina (class III or more) are advised not to go for physical exercise.

Avoidance of Alcohol

Use of Alcohol should be avoided by everyone as far as possible.

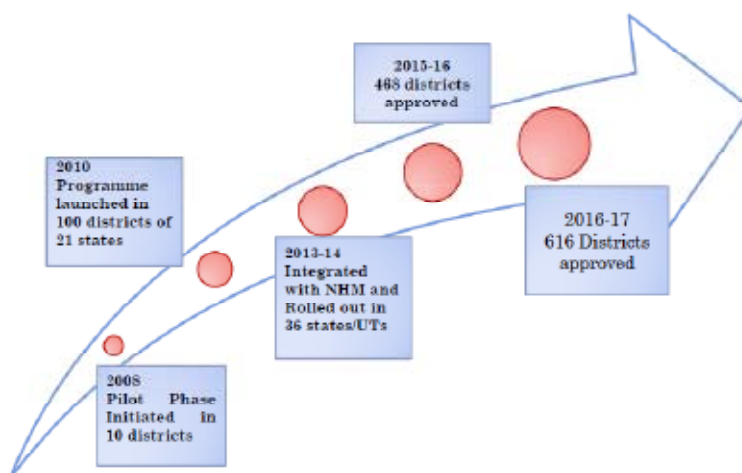
Tobacco cessation

- All non-smokers should be encouraged not to start smoking. All smokers should be strongly encouraged to quit smoking.

Evolution of NPCDCS

The National Programme for the Prevention and Control of Cancer, Diabetes, Cardiovascular Diseases and Stroke (NPCDCS) was initiated in 100 districts in 2010, the programme integrated with the National Health Mission in 2013 and by 2017 it is envisaged to be rolled out in the entire country. The focus of NPCDCS was to enable opportunistic screening for common non communicable diseases, at District and CHC levels, through the setting up of NCD clinics.

Figure 1.3: Evolution of NPCDCS



Objectives of NPCDCS

- Health promotion through behaviour change with involvement of community, civil society, community based organizations, media etc.
- Population based screening and Opportunistic screening at all levels in the health care delivery system from sub-centre and above for early detection of diabetes, hypertension and common cancers. Outreach camps are also envisaged.
- To prevent and control chronic Non-Communicable Diseases,, especially common Cancer, Diabetes and Hypertension.
- To build capacity at various levels of health care for prevention, early diagnosis, treatment, rehabilitation, IEC/BCC and operational research
- To support for diagnosis and cost effective treatment at primary, secondary and tertiary levels of health care.
- To support for development of database of NCDs through Surveillance System and to monitor NCD morbidity and mortality and risk factors.

Strategies

- Health promotion, awareness generation and promotion of healthy lifestyle
- Screening and early detection
- Timely, affordable and accurate diagnosis
- Access to affordable treatment,
- Rehabilitation

Package of Services

It is envisaged providing preventive, promotive, curative and supportive services (core and integrated services) in Cancer, Diabetes, Cardio-Vascular Diseases (CVD) & Stroke at various government health facilities. The package of services at various levels are mentioned in Table 1.

Table 1.1: Package of Services

Health Facility	Packages of services
Sub centre	<ul style="list-style-type: none"> ▪ Health promotion for behaviour change and counselling, ‘Population based/ Opportunistic’ Screening of common NCDs including cancer. ▪ Awareness generation of early warning signals of common cancer. ▪ Referral of suspected cases to PHC/CHC/ nearby health facility and follow up of patient put on treatment

PHC	<ul style="list-style-type: none"> ▪ Health promotion for behaviour change and counselling ‘population based/ Opportunistic’ Screening of Diabetes, hypertension and three common cancers (oral, breast, and cervical by VIA) ▪ Clinical diagnosis and treatment of common NCDs including Hypertension and Diabetes, referral of complicated cases of DM/HTN to CHC/DH ▪ Identification of early warning signals of common cancer ▪ Referral of suspected cases to CHC/DH and follow up of patient put on treatment
CHC/FRU	<ul style="list-style-type: none"> ▪ Prevention and health promotion including counselling, Early diagnosis through clinical and laboratory investigations, ▪ Management of common NCDs, Lab. investigations and Diagnostics: Blood sugar, Total Cholesterol ,Lipid Profile, Blood Urea, Creatinine, X-Ray, ECG,USG (To be outsourced, if not available) ‘Opportunistic’ Screening of common cancers (Oral, Breast and Cervix) ▪ Referral of complicated cases to District Hospital/higher health care facility.
District Hospital	<ul style="list-style-type: none"> ▪ Diagnosis and management of cases of CVDs, Diabetes, COPD Stroke and Cancer (outpatient, inpatient and intensive Care) including emergency services particularly for Myocardial Infarction & Stroke. ▪ Lab. investigations and Diagnostics: Blood sugar, Lipid Profile, KFT, LFT, X-Ray, ECG,USG ECHO, CT Scan, MRI etc (To be outsourced, if not available) ▪ Referral of complicated cases to higher health care facility Health promotion for behaviour change and counselling, ‘Opportunistic’ Screening of NCDs including common cancers(Oral, Breast and Cervix) ▪ Follow up chemotherapy in cancer cases, Rehabilitation and physiotherapy services
Medical College	<ul style="list-style-type: none"> ▪ Mentoring of District Hospitals, Early diagnosis and management of Cancer, Diabetes, CVDs and other associated illnesses, Training of health personnel, Operational Research
Tertiary Cancer Centre	<ul style="list-style-type: none"> ▪ Mentoring of District Hospital and outreach activities, Comprehensive cancer care including prevention, early detection, diagnosis, treatment, palliative care and rehabilitation, ▪ Training of health personnel& ▪ Operational Research

Expected Outcomes:

- The programme and interventions would establish a comprehensive sustainable system for reducing the rapid rise of NCDs, disabilities& deaths due to NCDs. Broadly, following outcomes are expected.
 - Reduction in exposure to risk factors, life style changes leading to reduction in NCDs
 - Improved quality of life
 - Early detection and timely treatment leading to increase in cure rate / control and survival
 - Reduction in prevalence of physical disabilities including blindness and deafness
 - Providing user friendly health services to the elderly population of the country
 - Reduction in deaths and disability due to trauma, burns and disasters
 - Reduction in out-of-pocket expenditure on management of NCDs and thereby preventing catastrophic implication on affected individual.

Inter-sectoral convergence for prevention and management of NCDs

NCD prevention includes a wide spectrum of activities, most of which are in the non-health sector e.g. tobacco, alcohol, healthy diet, physical activity. If we are to address these problems, we have to involve different sectors,

work with non-health departments and move beyond hospitals and health centres e.g. food vendors, traders, media, youth groups, women's groups etc. The medical officer plays a vital role in inter-sectoral collaboration. Activities that can be carried out by the medical officer and his staff is mentioned below:

- Panchayati Raj Institutions: PRIs should be sensitized to include NCD issues in Village Health Sanitation and Nutrition Committees (VHSNCs) and be involved to facilitate and promote IEC activities related to NCD prevention.
- Schools (Education): Training of teachers in screening, and health promotion activities, promotion of physical activity of children, introduction of healthy foods in canteens, provision of fruits and vegetables in mid-day meal, ensuring tobacco free environment in schools, inclusion of NCDs and their prevention in school curriculum and extra-curricular activities, involving parent teacher association for awareness of the programme and IEC activities
- Involvement of AYUSH practitioners in prevention and control of NCDs
- Collaboration with district administration for strict enforcement of laws related to NCDs
- Developing of linkages with social groups (mahila/youth) for various activities related to NCD prevention and control under the programme.

New Initiatives under the NPCDCS

- “Population-based Screening” for early detection of common NCDs in community, utilising services of Frontline-workers and Health-workers under the existing Primary Healthcare System
- Inclusion of guidelines for prevention and management of Chronic Obstructive Pulmonary Disease (COPD) and Chronic Kidney Disease (CKD) under NPCDCS
- National strategy for ‘bi-directional screening’, early detection and better management of Tuberculosis-Diabetes comorbidities, as a joint collaborative activity between RNTCP and NPCDCS
- Collaborative activities with AYUSH
- Multi-sectoral Action Plan for NCDs
- Intervention on Rheumatic Heart Diseases

Chapter 2 : Population Based Screening for NCDs

Rationale for population based screening for common NCDs (Diabetes, Hypertension and Breast, Cervical and Oral Cancers)

Under NHM, population based screening for NCDs including the three common cancers is being initiated as a part of comprehensive care which would complement the NPCDCS.

In our country due to **low levels of health awareness and significant information asymmetry that exists, screening for diseases where there are no obvious symptoms is perceived** to be an unnecessary process, particularly so, amongst **the poor**, for whom a day's visit to the secondary or tertiary facility for screening, might mean the loss of a day's wages. Instituting population based screening at the sub-center for **common NCDs (diabetes, hypertension and breast, cervical and oral cancers)** would be **particularly beneficial to women**, given current low levels of care seeking among them and limited access to health services.

Such screening would also **address the issue of equity**, since population based screening would also enable reach to the marginalized, who are also excluded from health care services on account of poverty and other forms of marginalization. Thus in order for screening programmes to be easily accessible, particularly for women and other vulnerable groups, they need to be decentralized to a level of care as close as possible, and be undertaken on a population wide level for particular age categories. The principle of screening at the community level is that no individual should need to travel more **than half an hour to be screened**.

Population based screening will also serve the purpose of increasing awareness in the community about NCDs/ risk factors and the need for periodic screening. It also enables an understanding of better health and avoidance of risk factors in the general community. Effective and accessible screening program for NCDs and common cancers ensure early detection and increase in survival rates. However, screening for NCDs and their risk factors is not an end unto itself. It needs to be linked to accessible high quality treatment at affordable costs, regular follow up and management as and when required.

Implementation of population based screening would be through the regular health system, supported by the District NCD cell for planning, monitoring and reporting.

Process of population based screening for common NCDs (Diabetes, Hypertension and Breast, Cervical and Oral Cancers)

Population based screening for diabetes mellitus; hypertension and the three common cancers will be done amongst all women and men aged 30 years and above. It would be included in the set of services being offered as part of comprehensive primary health care.

- The first step in the **process is the active enumeration of the population** and registration of families through **individual health cards placed within a family health folder**. These manual records need to be converted into electronic database at PHC. However these cards will be replaced by electronic formats eventually. A process of enumeration of eligible couples, women and children in need of maternal, newborn and child health services already exists. Such listing will be expanded to include all members over 30 years. The initial enumeration would also list existing health issues/diseases/disabilities and exposure to risk factors among individuals to estimate disease/risk burden; which can be utilized to prioritize health interventions.
- **ASHAs will undertake completion of the health cards**. In some urban areas where **ASHAs are currently not available**, the ANM will undertake such enumeration. Each HWC/Sub center would

maintain these family folders to ensure that the population within its coverage area is registered. Any person resident in the area, for more than six months, would qualify to be registered.

- **The family and individual member would be allocated a unique health ID**; which will help in identification of family members. Ideally, individual ID should be the Unique Identification (UID), AADHAR and for the family, the family code used in the National Population Register (NPR), or the Socio-Economic Caste Census (SECC) may be used. Where the Aadhar card is available or a card under the Rashtriya Swasthya Bima Yojana (RSBY) has been provided, these numbers would be part of the registration process. The health cards issued to each family member would be used to document health events (screening/disease/treatment/complications, etc) and would also help in generation of population based statistics.

The Framework for population based screening common NCDs (Diabetes, Hypertension and Breast, Cervical and Oral Cancers)

- At the start of the programme, ASHAs will complete a **Community Based Assessment Checklist (CBAC)** (Annexure 1) 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). This form is intended to capture data related to age, family history for any of the NCDs, waist circumference, and risky behaviours such as physical inactivity, use of/ or exposure to tobacco and alcohol use. This section of the form has questions that are allocated a score. **A score of below four implies Low risk.** ASHA/ANM will 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.** The tool also includes questions related to symptoms for cancer cervix, breast cancer, oral cancers 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 to use it as a 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 be trained to understand that it is important for all those over 30 years to be screened, and that the form would also helps them emphasise certain aspects of causation, prevention, and prioritization. **The information from the form should not be used for estimating population prevalence or for elimination of individuals from screening and early detection**
- Once this exercise is completed, the ASHA will ensure that all those in this age category, particularly those who appear to be at risk for NCDs are informed of the benefits of being screened and actively mobilized to attend the screening day at a fixed location on a specific day. On a fixed day in a week at Village or Sub centre, 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.
- 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, cervical cancer screening requires a space where speculum examinations and visualization with acetic acid can be done in privacy and have facilities for sterilization of equipments.
- Cervical cancer screening should be supported and supervised by a trained Lady Health Visitor/ Staff Nurse or even a Medical officer, and the screening days should be preceded by mobilization events in the coverage area to enable awareness and high levels of participation. The screening days should be conducted with the ambience of a mela or festive gathering to highlight the importance of the process.
- Initially population based screening will be conducted in selected sub-centres and PHCs in during first year, and will be expanded progressively to cover all sub centres. Alternatively, similar to the Village Health and Nutrition Day/Urban Health and Nutrition Day, screening for Hypertension, Diabetes, Oral and Breast Cancers can be undertaken at the level of the village, provided the principles elucidated above are adhered to. For cervical cancer screening alone, women could be screened at SC or PHC equipped for the purpose. As and when states establish the Health and Wellness Centres (at Sub centres), a lady

mid level provider could undertake the screening. Village Health, Sanitation and Nutrition Committees (VHSNC) and Mahila Arogya Samiti (MAS) should also be actively involved in this endeavor.

- Concerned ANMs, LHVs, SNs, and mid-level providers would be trained in Oral Visual Examination (OVE) and Clinical Breast Examination (CBE). They would also be trained in Visual inspection using Acetic Acid (VIA) for cervical cancer screening. LHVs/SNs should serve as mentors and trainers to the sub centre staff and also assist when there are shortages/absenteeism. Staff Nurses and Medical Officers at all facilities: PHC, CHC and DH would also be trained in these methods, so as to serve as mentors and trainers to the next lower level.
- For cancers of the oral cavity and breast, the first level of referral is the CHC/ SDH/ DH and then to the DH for a biopsy for confirmation. For cervical cancer, the CHC could offer colposcopy, for those that are VIA positive and cannot be managed by cryotherapy at the level of the PHC. The biopsy cases would need to be referred to the DH, or to the nearest tertiary centre.
- In a population of 1000, the proportion of people in the age group over 30 years, is about 37%, (Census 2011) implying about 370 people (182 women and 188 men). In a normative sub centre population of 5000, this would roughly mean about 1850.

Working towards this aim, in every district, a mix of PHCs and sub centres/Urban PHCs/Urban CHCs would be selected so that the population coverage envisaged annually over the three-year time frame is achieved..

Table 2.1: Target population for screening year-wise, level-wise and type of NCDs

Phasing year	level	DM, HT and oral cancer (men & women) 30-65 years	Cervical and breast cancer (all women) 30-65 years *
1st year 50% coverage	Village	185	91
	Sub-Centre	925	455
2nd year 65% coverage (1st year+15%)	Village	240	118
	Sub-centre	1200	590
3rd year 80% coverage (2nd year+15%)	Village	296	146
	Sub-centre	1480	730

Source: Operational Framework for Management of Common Cancers, GOI 2016

As under the programme those found negative on screening in first year will be screened every 5 years, hence in second year only 15 % of eligible population in her area will be screened so the amount of screening for oral cancers in second year would be 56 individuals (including 27-28 female for cervical and breast cancer) and this would apply for subsequent year also.

Table 2.2: Post PBS follow-up process for common NCDs

Type of NCD	Frequency of screening	If positive on screening at Village/SC/PHC, then Role of medical officer
Diabetes	Once in a year	Confirmation of DM, CVD risk assessment#, treatment and management, in case of complications referral to CHC/DH, follow up & support
Hypertension	Once in a year	Confirmation of HT, CVD risk assessment#, treatment and management, in case of complications referral to CHC/DH, follow up & support
Breast cancer	Once in 5 year	Referred through PHC MO to the higher facility equipped for confirmation and management of Ca breast.
Cervical cancer	Once in 5 year	Referred through PHC MO to the higher facility equipped for confirmation and management of Ca cervix.
Oral Cancer	Once in 5 year	Referred through PHC MO to the higher facility equipped for confirmation and management of Oral Cancer

CVD risk assessment using the WHO/ IHS chart

*the biopsy of specimen either to be sent to the nearest medical college or using the mechanism under free diagnostics initiatives under NHM, to the nearest NABL certified laboratory.

Role of Medical officer in population based screening (Diabetes, Hypertension and Common Cancers)

Capacity building

- Medical officer at PHC will train and mentor the support staff in development of the village work plan for each sub-centre for operationalization of population based screening for common NCDs. working under him/her
 - Active enumeration of the population,
 - Registration of families through individual health cards and
 - Preparation of family health folder
- After doing the training need assessment he will develop training plan for all support staff including VHSNC/MAS

IEC/BCC

- Raising awareness on risk factors of NCDs, healthy lifestyle, benefits of screening and social protection schemes and other treatment options that would cover the costs of care, through platforms such as meetings of Gram Sabha, SHGs, VHSNCs and through traditional media such as Kala Jathas, use of folk/local media religious festivals, camps may be used.,
- Raising awareness on support networks and programmes to address habits such as tobacco and alcohol consumption, and likely complications of their conditions. This is to be complemented by inter personal communication and group health education, and using platforms such as the Village Health and Nutrition Day (VHND).
- Individual and family counselling for those who have been put on treatment for compliance to treatment and for lifestyle modifications.
- For those diagnosed with NCD, patient support groups facilitated by the ASHA/ASHA facilitator to improve motivation and share challenges and success related to life style changes, behaviour modification, reduction of substance abuse and adherence to treatment should be created

Management & Referral

- Manage and/or timely referral of cases with complications of NCDs /cases requiring diagnostic work-up for cancer/ COPD/ epilepsy. *For management of cases of common NCD including cancers, please refer to algorithm on specific disease management chapter.*
- Mapping of the public health facilities which are equipped for confirmation and management of complications of NCDs/Cancers nearest to his PHC/CHC for appropriate and timely referral of the patient diagnosed with complications of NCDs /cancers.
- Ensure follow up at appropriate time. First follow up at three – months for all, or sooner for patients with concerns/ complications,
- Consider annual referral to specialist for HT/diabetes

Monitoring & Supervision

- Technical support for the Staff Nurse/pharmacist/counsellors/lab technician/ ANM/ ASHA for appropriate maintenance of records and reports on screening, treatment, counselling, referral and follow up and timely submission to higher level.
- Supportive supervision and monitoring of NCD Day/VHND also should have a plan for reviewing the selected cases of NCDs during routine visits.
- Incorporating review of various components of NPCDCS in monthly review meetings, e.g., will review whether the monthly reports are prepared satisfactorily and send regularly, challenge the ANM/ASHA facing in screening, referral and follow ups of the patients.

Others

- Identify appropriate sub-centre with adequate infrastructure, facilities and manpower to carry out cervical cancer and other cancer screening
- Ensure proper inventory management of the health facility to prevent stock out and provision for one-three months' supply of drugs for each patient diagnosed with DM and HT.

Role of support staff (ANM)

The ANMs will have a prominent role in implementing the Programme at the level of the sub-centre.

- **Population enumeration to cover the eligible population:** Active enumeration of all members over 30 years in the families and registration of families through individual health cards placed within a family health folder. The family and individual member would be allocated a unique health ID which will help in identification of family members. ASHAs will normally undertake completion of the health cards. In some urban areas where ASHAs are not currently available and in states like Tamil Nadu where ASHAs are available only in tribal areas, the ANMs will undertake such enumeration.
- **Complete Community Based Assessment Checklist (CBAC):** for NCD screening and identify individuals with high risk behaviours. In areas where ASHAs are not currently available, ANM will complete a Community Based Assessment Checklist (CBAC) for all women and men over 30 years in their population. ANM will ensure that all those in this age category, 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.
- **Review completed CBAC:** for cancer symptoms/ epilepsy/ COPD and refers as appropriate
- **Supportive supervision:** through joint visits with ASHA, where required in order to motivate people to attend the screening day
- **Raising awareness:** about NCDs, including about the effects of tobacco consumption, alcohol use, obesity, family history, lack of exercise, unhealthy diets.
- **Screening:** for hypertension, diabetes, and breast cancer, cervical cancer and oral cancer at the sub centre level and referring the individual who needs confirmation and initiation of treatment plan
- **Ensuring the availability and maintenance of equipment:** for screening of hypertension, diabetes and cancers at the Sub centre level.
- **Lifestyle counselling/ Behaviour Change Communication (BCC):**for people with diabetes and hypertension
- **Provide follow-up management:** for patients like monthly drug supply, periodic BP/ blood sugar measurement, referral for complication
- **Co-ordinate with ASHA, ASHA facilitator, AWW and volunteers:** in conducting the fixed day screening at the sub centre.
- **Accompany patients to health facilities/ referral centres:** guide them through the consultation and diagnostic processes, on and as required basis, in areas where ASHAs are not currently available
- **Maintain NCD register:** with the demographic details, risk factors, symptoms, BP/ blood glucose readings, symptoms requiring investigation for cancers, referral, treatment follow-up data and complications.
- **Maintains village register:** to record cases on treatment including referral history, in areas where ASHAs are not currently available.
- **Co-ordinate with the PHC team :** MO, Staff nurse, Laboratory Technician and other staff, in smooth implementation of the NPCDCS Programme

Role of ASHA in PBS

In order to provide community level care, ASHA will continue to use Home Visits, the Village Health Nutrition Day (VHND), and meetings of Village Health Sanitation & Nutrition Committee (VHSNC) to expand the reach to all adults over 30 years of age.

The ASHA Facilitator and ANM will support ASHA in household visits, checking the completed CBAC, conducting community health promotion activities, and follow up, particularly among those who are not regular with the treatment or are not making required lifestyle changes.

Tasks of ASHA in Prevention and Control of Non-Communicable Diseases

- Listing of all adults above the age of 30 years.
 - Completing the Community Based Assessment Checklist
 - Organizing a screening day- understanding the work-flow processes
 - Undertaking health promotion activity in the community.
 - Undertaking follow up for treatment adherence and enabling lifestyle changes
 - Creating Patient Support Groups
1. **Listing:** ASHA will list all women and men who are 30 years of age and above. Normally in a population of 1000 there will be about 370 people in this age group (182 women and 188 men). This list is to be updated every 6 months. The information is then to be given to the AF/ANM who manages the sub centre of your area.
 2. **Completion of Community Based Assessment Checklist (CBAC)** for NCD screening through home visits. The next task is to complete a CBAC (Annexure 2) for all in this age category. This form is intended to capture information on demographic indicators, and NCDs risk factors. The CBAC also includes questions related to symptoms for cancer cervix, breast cancer, oral cancer, etc. The checklist will help ASHA to remember the key risk factors, identify those who must be prioritized to attend the screening camp and refer the individuals with symptoms to the nearest health facility where a Medical Officer is available. The checklist itself does not diagnose a patient with disease. The key message is that most NCDs are preventable and also that NCDs including cancer can be treated if detected early.
 3. **Screening.** On a fixed day, every week, the ANM will undertake screening for hypertension, diabetes, oral and breast cancer. For hypertension and diabetes screening should be conducted every year, and for cancers once in five years. Until the ANMs are trained for detecting cancer of the cervix, screening for cancer cervix will take place at the PHC/CHC nearest the village. Depending on the distance the ANM led screening can take place at the village or at the sub- centre. In urban areas, this can take place in the Urban PHC or outreach sessions. Screening involves examination of the mouth and the breast by the ANM, measurement of BP and glucose. ASHA will also be trained to use the BP apparatus and glucometer and support the ANM during the screening process.
 4. **Mobilize** the community to attend the screening on the date and time of the ANMs visit to the village or the date on which they need to go to the sub centre. On a particular day, about 30 people can be screened. Thus, in twelve or thirteen days you can screen the target population. These will be spread over the entire year. The ANM will make a schedule for screening in her area-and ASHA will get the dates for her area. ASHA will also help the ANM in recording the measurements. On every screening day, ASHA will also have to ensure that VHSNC and MAS members are also present and support her in undertaking health promotion activities. People who have already been diagnosed with one of these conditions, their BP and glucose should be measured on a monthly basis and not necessarily on the screening day.
 5. **Undertaking Health Promotion:** Health promotion to reduce the specific risk behaviours, e.g., unhealthy diets, physical inactivity, tobacco and harmful drinking etc for prevention of NCDs. ASHA will ensure that health promotion activities are continuous and not limited to the screening day alone.

She will use Home Visits, the Village Health Nutrition Day (VHND), and meetings of Village Health Sanitation & Nutrition Committee (VHSNC)/MAS for health promotion activities.

- 6. Undertaking follow up for treatment adherence and enabling lifestyle changes:** If an individual is referred by the ANM to the PHC-MO, ASHA needs to follow up with them or even escort them to the health facility to get them examined by the MO. Some of them may be put on treatment for blood pressure or diabetes or some may be needed to go to a CHC or district hospitals for confirmation of cancer. Once an individual is put on treatment for hypertension or diabetes the treatment is most likely lifelong, ASHA will make sure that they obtain their supply of drugs from the sub center or PHC, and are regular in taking the medicines. She will also need to undertake home visits **for treatment adherence, enabling lifestyle changes** and referring in case of any complications to MO (PHC). In the case of cancer patients, the treatment is at the level of a medical college or specialized cancer treatment centre. However, when the patient returns home she should follow up to provide support and enable referral in case of any symptoms.
- 7. Creating Patient Support Groups:** ASHA will try to form groups of patients diagnosed with hypertension, diabetes and those on cancer treatment. Patients/friends/families/frontline workers can form these groups to help each other by bringing them together. Patient support groups help patients and their family members by providing mutual support, providing information about diseases, raising awareness about complications, Countering discrimination and stigma attached to a particular disease and enabling support for treatment continuation and changes in lifestyle behaviour. The ASHA should ensure that individuals who are part of marginalized groups and have a disease condition also be encouraged and supported to become part of these groups.

Chapter 3: Management of Diabetes

What is Diabetes?

Diabetes is a disease in which the body does not produce or properly use the hormone insulin. The body needs insulin to convert sugar, starches and other foods into energy. Impairment of insulin secretion and action in the body leads to abnormally elevated levels of glucose in blood, a condition classically termed as Diabetes.

What are the different “types” of Diabetes?

Diabetes is classified into three types namely Type 1 Diabetes, Type 2 Diabetes and gestational diabetes. A description of each of these types is given below while guidelines for management elaborated in the following sections are specific to type 2 Diabetes.

Type 1 Diabetes (T1DM):

Usually occurs in younger people, children and adolescents. The diagnosis of T1DM can be made throughout childhood but it is more likely below 15 yrs of age. The onset is usually acute and severe and insulin is required for survival. Type 1 diabetes results from autoimmune destruction of the beta cells in the pancreatic islets. Family history of diabetes is rare in T1DM. Presence of features of associated autoimmunity (autoimmune disorders, vitiligo) and absence of obesity and acanthosis nigricans are characteristics of T1DM. In addition, urine of T1DM patients with uncontrolled hyperglycemia is positive for ketone bodies.

Type 2 Diabetes (T2DM):

Is the commonest type of Diabetes. It usually occurs after the age of forty years but occurs frequently even at lower age among Indians. T2DM was previously known as non-insulin dependent diabetes mellitus. The onset is usually insidious and may be mild to severe. The family history is usually positive and strong. Obesity, metabolic syndrome and acanthosis nigricans are usually seen in these patients while there is no evidence of autoimmunity. Further, there is no insulin dependence till late in the course of illness.

When is a person at high risk for Diabetes?

1. If he/she is overweight (BMI is more than 23kg/m²).
2. If he/she is physically inactive, that is, he or she exercises less than 3 times a week.
3. If he/she has high blood pressure
4. If he/she has impaired fasting glucose or impaired glucose tolerance.
5. If his/her triglyceride and/or cholesterol levels are higher than normal.
6. If his/her parents/siblings or grandparents have or had diabetes.
7. If she delivered a baby whose birth weight was 4 kgs or more.
8. If she has had diabetes or even mild elevation of blood sugars during pregnancy.

When to suspect diabetes?

1. Symptoms of uncontrolled hyperglycemia: excess thirst, excess urination, excess hunger with loss of weight

2. Frequent infections
3. Non-healing wounds
4. Unexplained lassitude
5. Fatigue
6. Impotence in men

Table 3.1: Criteria for diagnosis of T2DM using venous blood samples*

	Fasting Glucose (mg/dl)	2-hour Post-Glucose Load (mg/dl)
Diabetes Mellitus	≥126 or	≥200
Impaired Glucose Tolerance	< 126 and	>140 to <200
Impaired Fasting Glucose	≥110 to <126	

**WHO Definition 1999*

Capillary blood glucose value is also sufficient. Where capillary blood glucose measured by glucometer is used in the fed state (i.e., post food/post glucose/post meal), the >200 mg/dl cut off may be revised to >220 mg/dl.

Management of Diabetes

Management of T2DM should be initiated as soon as diagnosis is established even if the patient is asymptomatic. Initial assessment and management of the patients has to be carried out at PHC level. Management of T2DM comprises initial assessment, initial management and follow-up visits. Each of these components is elaborated here.

- Initial assessment of individuals suspected of having T2DM need to be subjected to risk assessment which include:
 - History and physical examination; (See table 3.2 below)
 - Assessment of blood glucose level;
 - Presence of CVD risk factors (lipid profile, hypertension); and
 - End-organ damage (urine for protein/ ECG/ fundus examination)

Table 3.2: Initial Assessment of Diabetic Patients for history and Physical examination

History (Ask for)	Physical Examination (Look for)
Symptoms of hyperglycemia	Weight
Duration since onset of symptoms	Body Mass Index
Precipitating factors such as recent infections, stress, change in dietary habits or physical activity levels	Waist circumference, Waist-hip ratio
Symptoms of Micro- and Macro-vascular Complications: visual disturbances, edema, breathlessness, angina, intermittent claudication, numbness, paraesthesiae	Acanthosis nigricans *
Hypertension, pre-existing cardiovascular Diseases	Blood pressure
Drug history	Peripheral pulses
Diet	Feet: calluses, ulcers, prominent veins, edema, injuries
Physical Activity: type, frequency	Fundus examination
Family History	Cardiovascular system
-Diabetes and complications	Peripheral nervous system
-Age at onset	Thyroid
-Cardiovascular disease, if any	

**Acanthosis nigricans is a brown to black, poorly defined, velvety hyperpigmentation of the skin, usually present in the posterior and lateral folds of neck, axilla, groin, umbilicus, and other areas. This occur due to insulin spillover (from excessive production due to obesity or insulin resistance) into the skin which results in its abnormal growth, and the stimulation of colour producing cells. The most common cause would be insulin resistance, usually from type-2 diabetes mellitus.*

Initial management include:

- Pharmacotherapy for the management of hyperglycemia and any other co-morbid conditions e.g. high blood pressure, dyslipidemia etc.;
- Therapeutic lifestyle management and
- Diabetes patient Education and counselling

T2DM: Principles of Management

Therapeutic Lifestyle management (healthy diet and physical activity) accompanied by drug therapy or insulin are the corner stone of diabetes management. Apart from this other concurrent complications should be addressed. The basic principles in the management of type-2 diabetes are:

- Modify Lifestyle: diet and physical activity
- Reduce Insulin resistance through reduction in weight, specifically reduction of fat mass
- Pharmacological treatment (if inadequate control): Metformin/ Sulfonylureas
- Treatment for high blood pressure: ACE-Inhibitors, Calcium channel blockers such as amlodipine and diuretics such as hydrochlorothiazide (For details refer the section on hypertension)
- Lipid control with statins

Box 3.1: The targets of control in Diabetes management

Ideal Targets of Control in the management of Diabetes	
Fasting Blood Glucose	<115 mg/dl
Post Meal Blood Glucose	<160 mg/dl
HbA1C	<7%
Total cholesterol	<180 mg/dl
LDL-cholesterol	<100 mg/dl
HDL cholesterol	>45 mg/dl
Blood pressure	<130/80 mgHg
Serum TG	<150 mg/dl

Source: ICMR 2005 guidelines
Please Note: The targets for diabetic population are lower than the non-diabetics

Glycosylated Haemoglobin (HbA1C)

A fraction of hemoglobin in the RBCs is found to be in a glycosylated form i.e. has glucose attached to it. The HbA1c level is proportional to average blood glucose concentration over the previous two to three months and therefore is an excellent indicator of how well the patient has managed his/her diabetes over the last four weeks to three months. Glycated hemoglobin is recommended for monitoring blood sugar control in diabetic patients.

American Diabetes Association (ADA) recommends an HbA1c goal of less than 7% for people with diabetes in general.

Pharmacotherapy

BIGUANIDES (Metformin)

- Mechanism of Action: Insulin sensitizer
- **Dose:** The dose of metformin varies from 250mg to 2000mg/day. Since patients may complain of nausea and gastric irritation, the dose can be administered after a major meal. Dose of metformin can be titrated based on blood glucose monitoring at intervals of 2-4 weeks. Currently the preferred approach is to start the patient on metformin and increase the dose to at least 1g/day. If despite this dose, optimum glucose control is not achieved, a sulphonylurea should be added (see Box 3.1 for targets of control).

- Advantages
 - No weight gain; some patients may experience weight loss. Hence metformin is useful in large majority of patients who are overweight
 - No hypoglycaemia
 - For monotherapy in obese patients
 - Can be combined with other anti-hyperglycemic agents including insulin
- Contraindications
 - Renal (Creatinine \geq 1.5mg% in men; Creatinine \geq 1.4mg% in women) / hepatic disease
 - Cardiac / respiratory insufficiency; other hypoxic condition severe infection
 - Alcohol abuse
 - History of lactic acidosis
 - Use of I/V radiographic contrast media Pregnancy
 - Temporarily withhold: surgery, acute illness

**Caution: Phenformin is a banned drug and is not recommended*

SULPHONYLUREAS (Glibenclamide)

- The dose of glibenclamide varies from 2.5-20mg/day, given in one or two doses. The dose can be titrated based on blood glucose monitoring at intervals of 1-2 weeks
- General rule: glucose lowering effect plateaus after half-maximal recommended dose
- Approved Indications: monotherapy; in combination with metformin and insulin
- Caution: Hypoglycemia can occur most likely among elderly, those with worsening renal function and among those with irregular meal schedules

General Guidelines for using oral anti-diabetic agents:

The treatment should be individualized and the points mentioned below are only broad based Guidelines. The necessity of diet, exercise and life style modifications needs to be emphasized; in some cases these measures alone would suffice. When pharmacological treatment becomes necessary, the following points may be considered:

➤ **Non-obese people with type 2 diabetes:**

In non-obese people with diabetes, start with a sulphonylurea / meglitinide or glitazone. If even after two to four weeks of initiation of treatment, symptoms still persist or blood sugar is not sufficiently controlled then a drug from another group like metformin can be added. If the initial blood sugar levels are very high, the symptoms are very severe or acute complications like ketosis are present, insulin has to be considered for treatment even at the onset, for a brief period.

If the initial assessment shows presence of complications like diabetic retinopathy or nephropathy, this indicates a long period of undiagnosed diabetes and insulin therapy on a continuous basis should be considered.

➤ **Obese people with type 2 diabetes:**

In obese people with diabetes, the starting drug is ideally metformin.

Similar Guidelines as mentioned above can be used to achieve good metabolic control with addition of other drugs like sulphonylureas/ meglitinides or glitazones and/ or insulin.

➤ **Lean people with type 2 diabetes:**

In India, many subjects with type 2 diabetes are lean or low body weight (BMI $<$ 18.5kg/m²). In these people with diabetes, metformin is better avoided and the use of sulphonylureas and glitazones

may be considered as first line of management. Quite often, such people with diabetes may require insulin for better control.

With increasing duration of diabetes, most oral anti-diabetic agents tend to be less effective and hence poly-pharmacy becomes inevitable, with use of drugs from multiple classes. However, insulin use should not be delayed and, if and when necessary, insulin should be introduced for tight glycaemic control.

Combination of oral drugs with insulin

When the glycaemic control is not achieved with the maximum dose of an oral agent/ combination therapy, this is called “secondary failure to oral hypoglycaemic agents (OHA).

It has been the experience of most physicians in India that combination of oral drugs and insulin helps to achieve good control of diabetes. While using combination therapy, the oral drugs may be continued in optimal doses, while intermediate acting/long acting/short acting insulin is added either at bed time or in the morning depending on the blood sugar profile of person with diabetes. However, if indicated, one should not hesitate to use insulin in multiple doses to achieve tight metabolic control.

When to refer to higher facility (CHC/SDH/DH)

- Uncontrolled infections;
- Co-morbid conditions, e.g., Hypertension, CAD, COPD, CKD etc.
- Severe cellulitis,
- Unresponsive UTI or other deep seated infections including bad diabetic foot needing intravenous antibiotics,
- Recurrent UTI not responding to oral antibiotics,
- Presence of ketones in urine

Diabetes patient education and diet counselling

Patient education on diabetes management and life style modifications is the corner stone of effective diabetes control and management and prevention of complications. At PHC level, nurses/multipurpose health workers can be trained to undertake this activity. At sub-district and district level hospital, dietician/counsellor and nurses can undertake diabetes patient education. Patient education topics that can be covered in the initial visit and follow-up visits are depicted in the table below.

Table 3.3: Patient education topics to be covered in the initial and follow-up visits

Initial Visits	Follow-up Visits
What is Diabetes?	Importance of Glycaemic Control
Why does it occur?	Prevention of Complications
Lifestyle measures: Diet, Exercise	Foot Care
Detailed lifestyle advice	Newer modalities of treatment
Use of Oral Drugs	Marriage Counseling
Advice on identifying signs and symptoms of hypoglycaemia and hyperglycaemia and their Management	Pre-conceptional counselling regarding the importance of glucose control prior to Pregnancy
Patient should be informed about the importance of factors other than glucose control: Cholesterol, blood pressure, stopping smoking/tobacco, etc.	

Foot care advice to the patients

- ☞ Inspect your feet daily for cracks, blisters, infections, and injuries. You may be able to see a problem before you feel it. If you can't see the bottoms of your feet easily, use a mirror. A magnifying glass may help you see better. 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. Moisturize dry skin by using oil. If it causes redness or irritation, discontinue its use and inform your doctor. If you are currently using a cream or lotion that keeps your skin soft and free of cracks, continue using it.
- ☞ Clip toenails straight across. Use a nail cutter; don't use a scissor and also smooth down the edges. If you can't easily reach your feet or have thick nails, have someone experienced trim your nails.
- ☞ 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. For more information and visual guidance visit <http://www.healthy-india.org/preventdiabetes5.asp>

Follow-up visits

Annual assessment of the patients has to be carried out at CHC/secondary care level for follow-up of blood glucose, urinary microalbuminuria, fundus examination, blood lipids, creatinine, feet examination and patient education. Primary care physicians need to follow up the diabetic patients regularly initially after 4 weeks for assessing effectiveness of treatment and patient stabilization on treatment, later on once in three months for compliance with medicines, lifestyle management, blood glucose control, blood pressure control and control of other risk factors.

Eye Care in diabetes

The Retina/fundus of all diabetes patients need to be checked at least once a year by a trained ophthalmologist even if there are no eye symptoms and the vision is 6/6. The patient needs to be accordingly referred for the same to the CHC, where ophthalmologist

Checklist for preventing diabetes complications

Every 3-6 months the patient should have a physical review by the physician. Checklist for the follow-up is as follows:

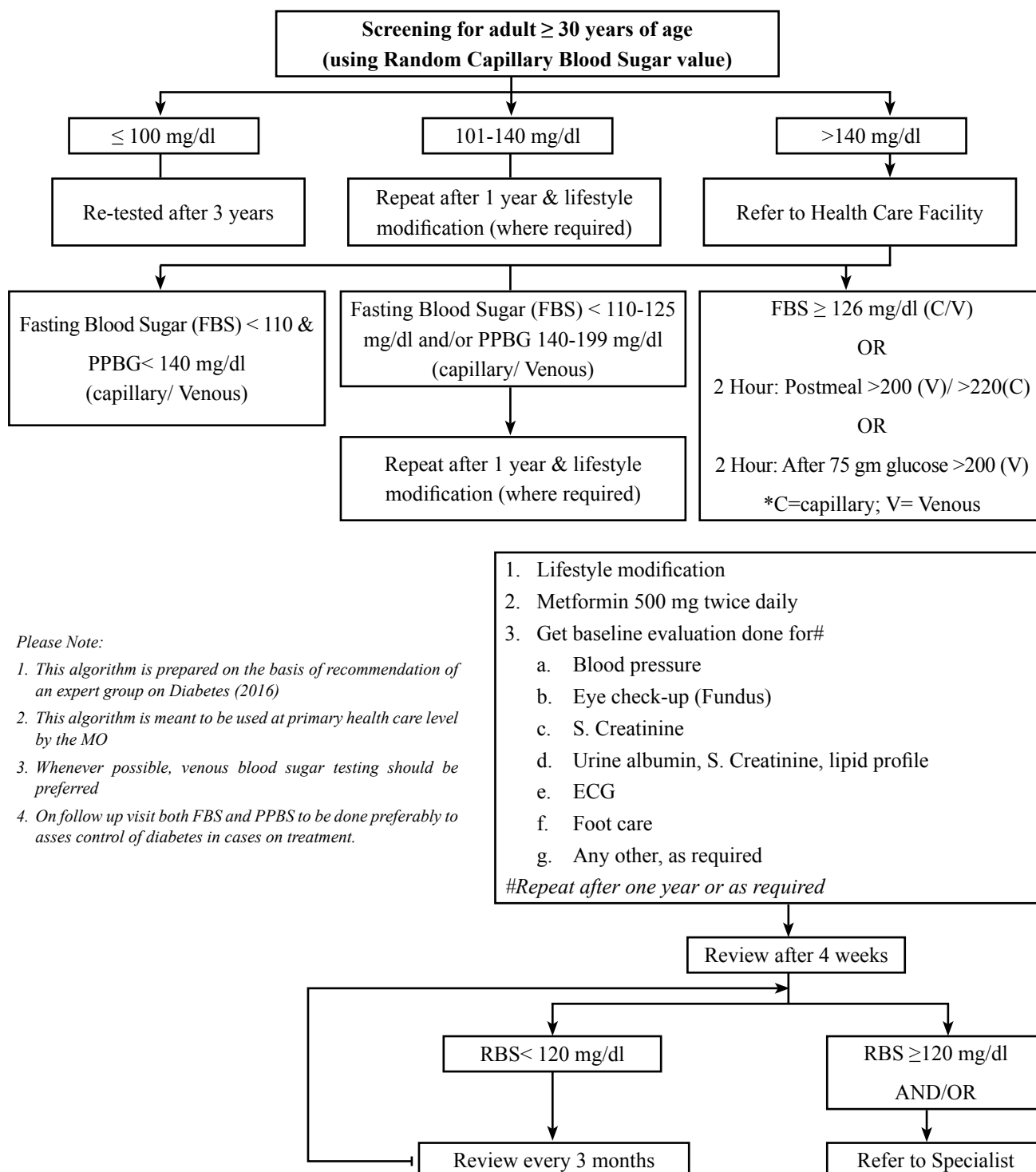
- Test blood sugar levels
- Test glycosylated haemoglobin levels(HbA_{1c}) (if facilities are readily available)
- Examine feet for sensations and circulation; Also for calluses, dryness, sores, infections, injuries
- Check blood pressure.
- Help the patient to give up tobacco, if he/she continues to use tobacco

- Reinforce of life style measures- increase physical activity levels and improve diet (please refer the section 4.9 on therapeutic lifestyle management).

Preconception counselling

- Counselling on pregnancy must start before conception. All women with diabetes must know that they should not conceive till their blood glucose is well controlled for at least 2-3 months before conception as ascertained by HbA_{1c}. Hyperglycemia at conception increases the risk of complications during pregnancy as well as congenital defects in the foetus. A summary of services for diabetes management, appropriate at each levels of care, is depicted in the table below

Figure 3.1: Algorithm for Screening and Management of Diabetes



Please Note:

1. This algorithm is prepared on the basis of recommendation of an expert group on Diabetes (2016)
2. This algorithm is meant to be used at primary health care level by the MO
3. Whenever possible, venous blood sugar testing should be preferred
4. On follow up visit both FBS and PPBS to be done preferably to assess control of diabetes in cases on treatment.

Chapter 4: Treatment Protocol for Hypertension

Abnormally elevated blood pressure is a pathological condition which increases the work load on the heart. This condition is termed as high blood pressure or hypertension. Based on the aetiology, high blood pressure is of two types:

Primary/essential: Primary or “essential” hypertension has no known cause, however many of the above said lifestyle factors are associated with this condition.

Secondary: Secondary hypertension is caused by some other medical conditions/problem or the use of certain medications. Secondary hypertension is seen only in very few individuals in the community. The causes of secondary hypertension include: kidney diseases: reno-vascular disease and chronic renal disease, endocrine disorders: hyperthyroidism, cushing’s syndrome and pheochromocytoma, sleep disorders, coarctation of the aorta and non specific aorto-arteritis. Some of these causes are often curable, and many others treatable.

Criteria for diagnosing high blood pressure

The table below provides a classification of blood pressure for adults ages 18 and older. The classification is based on consistent elevation during two or more properly measured BP readings in sitting position.

Table 4.1: Criteria for diagnosing high blood pressure

Category	Systolic	Diastolic
Normal	Less than 120	Less than 80
Pre-hypertension	120-139	80-89
High Blood Pressure		
Stage 1	140-159	90-99
Stage 2	160 or higher	100 or higher

Source : JNC VIII

The Risk assessment should cover:

- Assessment of medical history
- Physical Examination
- Laboratory Investigation

Table 4.2.: Initial Assessment of Hypertensive Patients for history and Physical and laboratory examination

Assessment of medical history	Physical examination	Laboratory Tests
A. Risk factors <ul style="list-style-type: none"> ▪ Lack of physical activity (or sedentary lifestyle) ▪ Obesity or being overweight ▪ Abdominal obesity ▪ High sodium intake/high salt intake ▪ Excess alcohol consumption B. Family history C. Symptoms of consequences of hypertension	A. BP measurement at least in one upper and one lower limb B. Measurement of Body weight and height to obtain BMI C. Measurement of Waist circumference	Essential: <ul style="list-style-type: none"> ▪ Blood Sugar ▪ Urine analysis for proteinuria Desirable: (at CHC/sub-district/district level hospitals depending upon the available facilities for laboratory investigations) <ul style="list-style-type: none"> ▪ Haemogram

Assessment of medical history	Physical examination	Laboratory Tests
D. Frequent intake of pain relieving drugs (NSAIDS) E. Steroid intake for asthma F. Breathing difficulty particularly on exertion G. Swelling of feet H. Urinary difficulties, history of passing stones in the past	D. Palpating all peripheral pulses E. Auscultation for bruit (renal, carotid, abdominal and others) F. Eye evaluation if ophthalmology facility is available	<ul style="list-style-type: none"> ▪ Serum creatinine ▪ Serum sodium and potassium levels ▪ Lipid profile ▪ Complete Urine analysis ▪ Electrocardiogram (ECG) ▪ X-Ray chest

Based on risk assessment, the management of high blood pressure cases can be initiated. The management should include the following:

- Therapeutic life-style management
- Drug Therapy

Pharmacotherapy

Whether a person requires medicines for his high blood pressure and the choice of medicine best for the patient would depend on:

- The blood pressure reading
- Whether the high blood pressure has already affected target organs in the body such as heart, kidneys, eyes and arteries
- Concurrent medical conditions such as diabetes, heart disease, kidney disease and other risk factors like use of tobacco, obesity and high blood fat levels (lipid profile) etc.

Treatment Goals

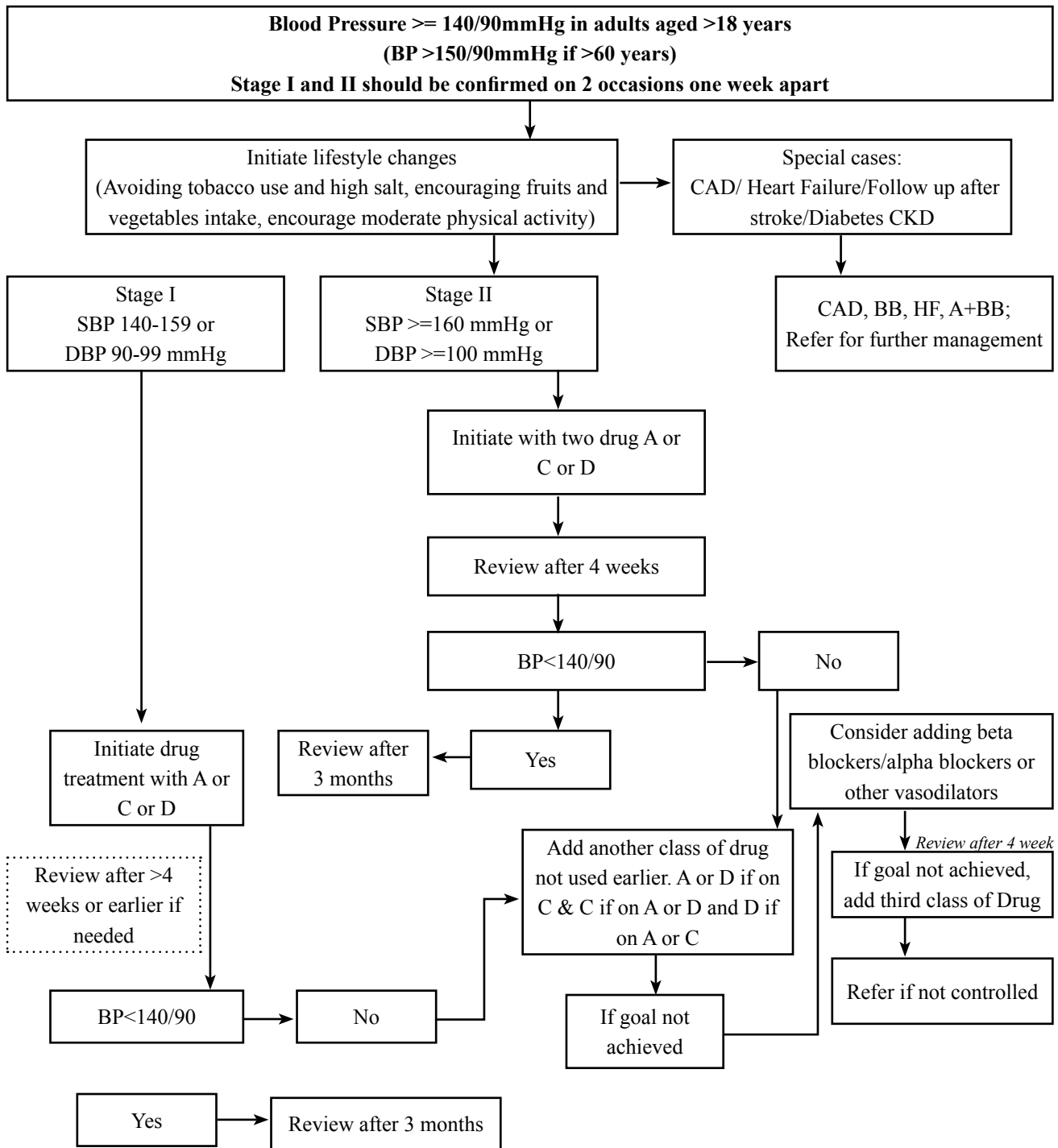
- Initial aim should be to obtain blood pressure level less than 140/90 mms of Hg
- Don't accept blood pressure levels of 140/90 mms of Hg or more
- Maintain healthy blood pressure throughout the person's lives
- Prevent and control risk factors which could give rise to high blood pressure

In the Indian context, diuretics (chlorthalidon/ Indapamide), calcium channel blockers (amlodipine) and ACE inhibitors (Ramapril/Perindopril) are relatively cheap. Drug therapy should be started in individuals at the time of diagnosis if they have blood pressure more than 140/90mmHg (despite non-pharmacological interventions) or have end organ damage such as proteinuria, high blood urea, ECG evidence of left ventricular hypertrophy, presence of heart diseases and evidence of retinopathy.

Therapy can be initiated with any of the three first line drug classes- a Calcium channel blocker (CCB), Angiotensin converting enzyme inhibitors (ACEI) or Angiotensin receptor blocker (ARB) and/or a thiazide (chlorthalidone/ Indapamide). The patient needs to be reviewed after 4 weeks of treatment. In case, his blood pressure is found >140/90mmHg, one more drug needs to be added. Triple combination therapy (ACEI/ARB+CCB+thiazide) can be given if not controlled. Another drug like beta blocker, aldosterone antagonist or alpha blockers can be added for optimization else a referral to a higher centre may be necessary.

A low dosage combination therapy such as ACEI/ARB + CCB, ACEI/ARB + thiazide, CCB + thiazide can be given for initiation of therapy. Triple combination therapy (ACEI/ARB+CCB+thiazide) can be given if not controlled. Another drug like beta blocker, aldosterone antagonist or alpha blockers can be added for optimization else a referral to a higher center may be necessary.

Figure 4.1: Algorithm for Management of Hypertension



⇒ ASCVD: Atherosclerotic CVD (CAD, CVA, PAD)

- CAD Coronary Artery Disease
- CKD Chronic Kidney Disease
- PAD Peripheral Artery Disease

⇒ RF Risk factor: Age (> 55 years in men, 65 years in women), Dyslipidemia (Total Cholesterol > 200 mg%), Smoking, Family history of Premature CAD (<55 years in men, < 65 years in women)

A - ACE Inhibitor/ Angiotensin Receptor Blocker Choices as in Table

C - Calcium channel blocker # Choices as in Table

D - Diuretic * Choices as in Table

LIST OF DRUGS

	Class of Drug	Drug	Initiation dose	Maximum dose
A	ACE Inhibitors	Enalapril	5 mg once daily (OD)	10 mg twice daily (BD)
		Ramipril	5 mg OD	10 mg OD
		Lisinopril	5mg OD	20mg OD
C	Calcium Channel Blocker	Amlodipine	5mg OD	10 mg OD
D	Diuretic	Indapamide	1.5 mg OD	2.5 mg OD
		Chlorthalidon	12.5 mg OD	25 mg OD
		Aldosterone antagonist		
B	B-Blocker	Atenolol	50 mg OD	100 mg OD
		Metoprolol	25 mg BD	50 mg BD

Special Situations

- **COPD:** Avoid beta-blockers
- If person is confirmed to be hypertensive and is also having diabetes the preferred drug should be ACE inhibitors for treatment of hypertension
- **CKD:** ACE-I is recommended if Serum creatinine is <2mg%, however, it should be initiated only if facilities to monitor serum creatinine and potassium are available. If these are not available then initiate with Amlodipine 5 mg.
- **CAD:** Beta-blockers are useful especially if history of angina or recent MI is present
- **Heart failure:** ACE-I are recommended as the initial drug of choice. Beta-blockers are to be added subsequently.

Chapter 5: Screening of common cancers and referral (Cervical, Breast and Oral)

The International Agency for Research on Cancer, the GLOBOCAN project¹ has predicted that the cancer burden in India will rise from nearly one million new cases in 2012 to over 1.5 million i.e., 1,569,196 by 2035. The three most commonly occurring cancers in India are those of the breast, uterine cervix and oral cavity. Together they account for approximately 34% of all cancers, and hence are public health priority in India¹. The odds of incurring catastrophic hospitalization expenditures are about 160% higher with cancer than for hospitalization costs for a communicable disease condition.

Role of Medical officer in Cancer Prevention and Control

Prevention of cancers

- Create awareness about the ills of tobacco and advocate avoidance
- Encourage and assist habitual tobacco users to quit the habit
- Promote healthy dietary practices and physical activity

Early detection of cancers

- Create awareness about the early warning signs of cancer
- Encourage breast awareness
- Encourage oral self-examination
- Create awareness about symptoms of cervical cancer
- Examine, as a routine, the oral cavity of patients with history of tobacco use
- Offer clinical breast examination to any woman over 30 years presenting to the health centre
- Offer screening for cervical cancer to any women over 30 years presenting to the health facility
- Promptly refer any person with a suspicious lesion for accurate diagnosis and appropriate treatment

Treatment of cancers

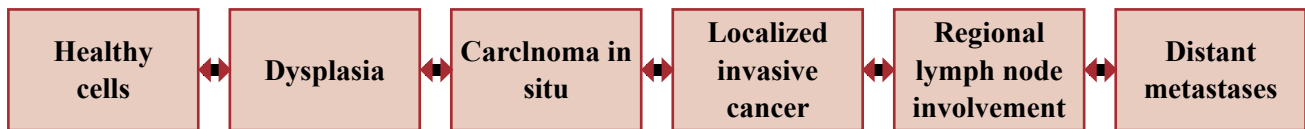
- Ensure that every patient complies with therapy advised
- If follow up care is required at the health centre level, make sure that detailed instructions are provided by the treating institution

Palliative care

- Ensure that the patient is free from pain as far as possible. Learn and practice the WHO step-ladder approach of pain management; refer to the appropriate centre for oral morphine
- Achieve control of unwanted symptoms to the extent possible
- Provide psychological support to the patient to accept the diagnosis and treatment
- Involve the family in diagnosis, treatment and care as far as possible

Cancer is a group of diseases characterized by uncontrolled cell multiplication which can occur in any living tissue at any site in the human body. Cancer develops in several phases depending on the type of tissue affected. Figure 1, shows the phases in cancer development.

Figure 5.1: Phases of cancer development



Survival rates for all three cancers are good, provided they are detected and treated in the early stages². Thus for example, the five year survival rates for early stage cancers are 60.2%, 76.3% and 73.2% for oral, breast and cervical cancers respectively. The prognosis for advanced stage on the other hand is poor, with five year survival rates being 3.3%, 14.9%, and 7.9% for these cancers. According to GLOBOCAN 2012, India accounts for 7.2% of global cancer incidence, but in terms of mortality, India accounts for 8.3% of global mortality. This highlights the fact that cancers in India tend to be detected late, leaving little opportunity for effective management and patient survival.

Warning signals for Cancers

- C Change in bowel or bladder habits
- A A wound that does not heal
- U Unusual bleeding or discharge
- T Thickening or lump in the breast or elsewhere
- I Indigestion or difficulty in swallowing
- O Obvious change in a wart or mole
- N Nagging cough or hoarseness of voice

Cervical cancer screening: Visual Inspection with Acetic acid (VIA)

Visual inspection of the uterine cervix, after application of **3 - 5%** acetic acid (VIA) is a simple test for the early detection of cervical pre-cancerous lesions and early invasive cancer. The results of VIA are immediately available and do not require any laboratory or specialist support. The categorization of the results of VIA depends upon the colour changes observed on the cervix. This test can be performed **by any trained paramedical health worker and not necessarily only by a doctor. Only minimal duration training is all that is required for performing this test.**

3-5% acetic acid is generously applied on to the **mouth of the cervix (ectocervix)** area and presence of any aceto-white lesion, particularly in the transformation zone close to the squamo-columnar junction after one minute of application are noted.

3 -5% acetic acid causes reversible coagulation of the proteins within the cells. After application acetic acid, normal squamous epithelium (of vagina) appears pink, columnar epithelium of uterus appears red, due to the reflection of light from the underlying stroma, which is rich in blood vessels, but in conditions like inflammation, benign and malignant growth, the epithelium contains a lot of cellular proteins as a result of increased nuclear activity, thereby giving a dramatic dense white patch (VIA positive). If there is a white patch, its density, margin and the relationship to the SCJ (squamo-columnar junction) should be noted. **The woman** who is VIA positive should be managed as per algorithm for cervical cancer screening and management.

Inclusion criteria: Any woman aged 30 years and above and not meeting any of the exclusion criteria should be screened at all screening centres.

Exclusion criteria:

1. Menstruation

2. Pregnancy
3. Within 12 weeks of delivery / abortion
4. Previous history of treatment for Cancer Cervix

If any woman who does not fall under inclusion criteria but having any symptoms, should also be immediately referred to MO PHC for further evaluation.

Requirements for doing VIA:

- Examination gloves
- Speculum (Cusco's self-retaining type preferred)
- Cotton tipped swabs
- Freshly prepared 3- 5% acetic acid (to be produced at least once a week by diluting 3- 5 ml of glacial acetic acid with 95 ml of distilled water)
- **Ring Lens System** (with halogen bulb preferred)
- VIA reporting forms

Procedure:

- Procedure should be explained to the woman.
- The woman should lie down on her back with legs folded (lithotomy position not required).
- Insert the speculum gently and expose the cervix.
- Note any abnormal discharge, bleeding or growth in the cervix.
- Apply adequate amount of acetic acid to the cervix using the cotton swabs.
- Wait for 1 minute to note the changes.
- Identify the Squamo-Columnar Junction(SCJ) as the line joining the pink smooth squamous epithelium with the red velvet like columnar epithelium
- Look for aceto-white patches.
- All the aceto-white patches are not considered positive.
- If there are no aceto-white patches in the ecto-cervix, then the test is negative.
- If there is a aceto-white patch, its density, margin and the relationship to the SCJ should be noted

Figure 5.2 Normal Cervix



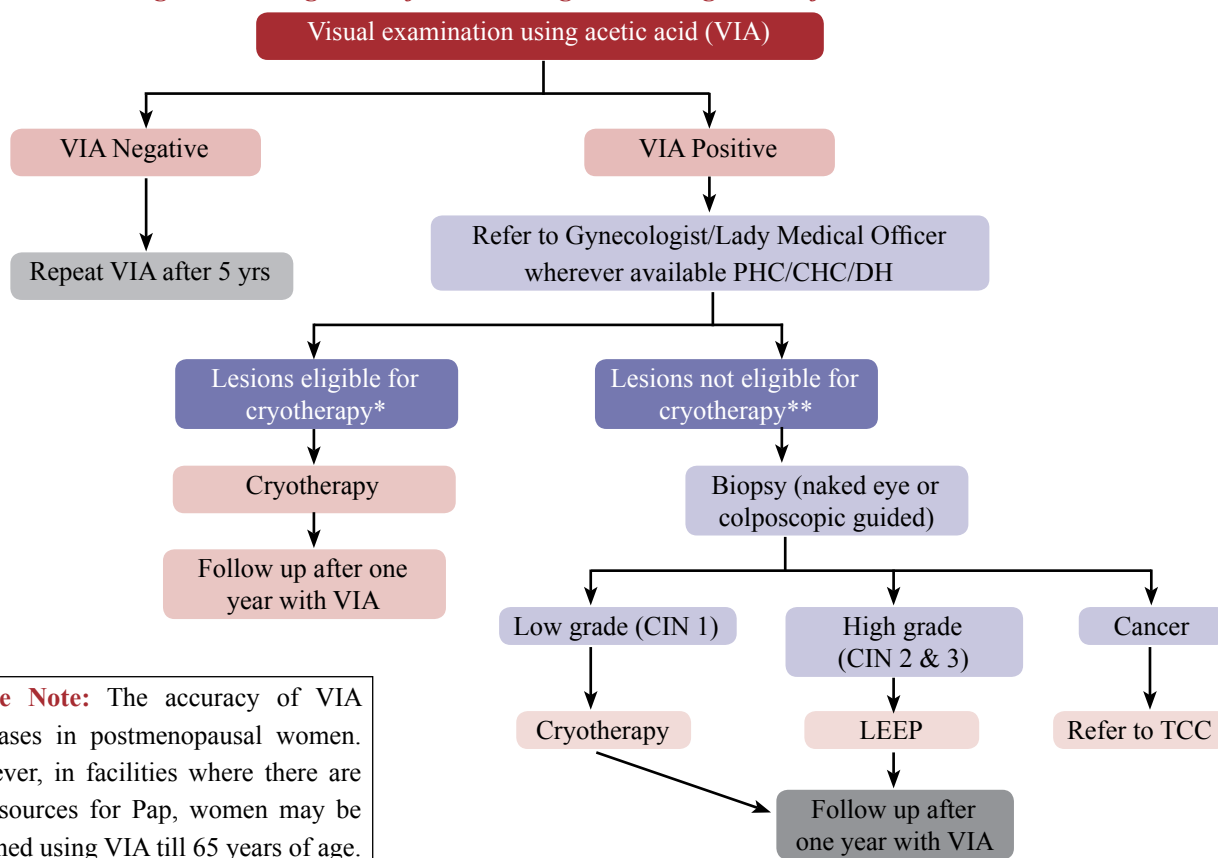
Figure 5.3: VIA showing aceto-whitening



Table 5.1 Criteria for categorizing VIA test results as negative or positive or invasive cancer

VIA CATEGORY	DESCRIPTION
NEGATIVE	<ul style="list-style-type: none"> No aceto-white lesions Transparent lesions or faint patchy lesions without definite margins Nabothian cysts becoming aceto-white Faint line like aceto-whitening at the junction of columnar and squamous epithelium
POSITIVE	<ul style="list-style-type: none"> Aceto-white lesions far away from the transformation zone Distinct, opaque aceto-white area Margin should be well defined, may or may not be raised Abnormality close to the squamo-columnar junction in the transformation zone and not far away from the os.
INVASIVE CANCER	Obvious growth or ulcer in the cervix. Aceto-white area may not be visible because of bleeding

Figure 5.4: Algorithm for Screening and management of Cervical Cancer



Please Note: The accuracy of VIA decreases in postmenopausal women. However, in facilities where there are no resources for Pap, women may be screened using VIA till 65 years of age.

***Eligibility for cryotherapy:**

- The lesion should not be spread over more than 2 quadrant of cervix
- The entire lesion is located in the ectocervix without extension to the vagina and/or endocervix
- The lesion is visible in its entire extent
- The lesion can be adequately covered by the largest available cryotherapy probe
- There is no suspicion of invasive cancer

**** Cryotherapy not recommended if:**

Symptoms:

- 1. Postcoltial bleeding
- 2. Postmenopausal bleeding

Examination:

- 3. Overt cervical growth
- 4. Irregular surface
- 5. Bleeds on touch

Please Note:

MO to have a list of nearest facility there equipped for confirmation and management of Ca Cervix. He should refer directly the suspected cancer cases to these centres only.

Screening for breast cancer

Breast cancer is the commonest cancer among women all over the world. Some of the risk factors for breast cancer are

- Reproductive and hormonal factors – The older a woman is when she has her first child, the greater her chance of having breast cancer. Early menarche (before age 12), late menopause (after age 55) or never had children are also at greater risk. Women who take menopausal hormone therapy (oestrogen and progesterone) for five years or more after menopause also appear to have an increased risk.
- Family History: Risk of Breast cancer increases in women with a first-degree relative with breast cancer
- Other factors:
 - Being obese after menopause
 - Physical inactivity.
 - Alcohol intake: some studies suggest that the risk of breast cancer increases with increased intake of alcoholic beverages.

High Risk Group for occurrence of breast cancer

- Personal history of Breast Cancer
- Family History of Breast/ Ovarian/Colon Cancer
- Chronic Benign Breast Diseases

Prompt diagnosis of breast cancer in the early stage is very important. This is possible by increasing the level of awareness among women and health care professionals. The following methods may be used for early detection

Breast awareness: The first person to detect any lump in the breast is the woman herself which is by teaching the woman to be aware of any of the following signs at the earliest possible –

- A change in size
- A nipple that is pulled in or changed in position or shape
- A rash on or around the nipple
- Discharge from one or both nipples
- Puckering or dimpling of skin
- Lump or thickening in the breast
- Constant pain in the breast or armpit

In case a woman notices any such change, she should promptly visit the health centre or health professional

All women > 30 years will be received by the Staff Nurse /ANM at the screening centre, will be provided a pre-procedure counselling, and then screened using Clinical Breast Examination (CBE). Clinical Breast Examination is to be performed by a trained physician or a nurse or a health worker.

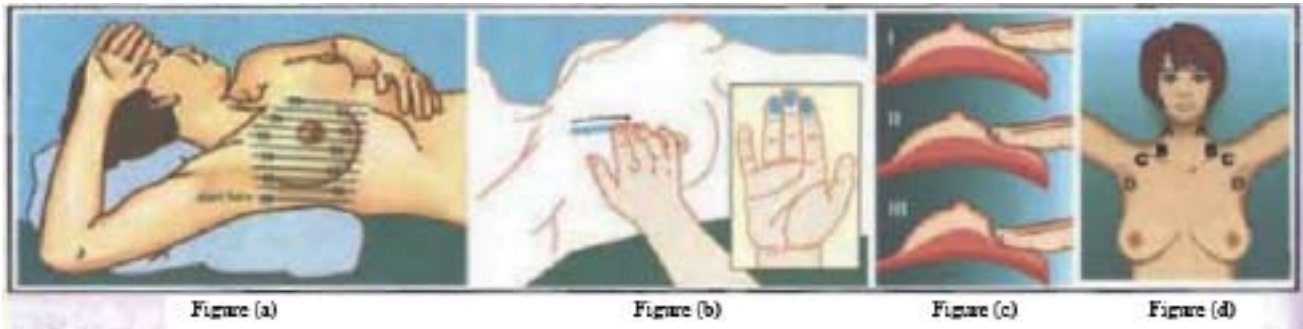
Clinical Breast Examination (CBE)

Both breasts are visually inspected and palpated in different positions from all sides for the following signs and referred for further investigations on finding for anything suspicious or abnormal.

Inspection: Any changes in symmetry in breast shape and size, skin changes – skin dimpling, skin retraction, skin ulceration, the level of both nipples, retraction of nipple(s), Inverted nipple. Please note that horizontal slit is a normal variation.

Palpation: Any discharge from the nipple(s), colour of the discharge, swelling, lumps, consistency of lumps, swelling in the arm pit (axillary area), above the collar bone (supra clavicular area) and root of the neck (infra clavicular area).

Figure 5.5: Steps of Clinical Breast Examination



- (a) Patients should be examined in sitting and lying down positions, with their ipsilateral hand overhead to enhance any changes in the breasts. Use of a small pillow under the shoulder/lower back will centralize the breast.
- (b) The finger pads of middle three fingers should be used to palpate (not squeeze) the breast in circular motion using a 'vertical strip' pattern (Figure a) with uniform pressure.
- (c) Palpation Pressure: (i) Light Pressure for superficial breast tissue; (ii) Medium Pressure for intermediate layer; (iii) Deep Pressure for tissue close to chest wall
- (d) Nodes : A&B - Supra clavicular area; C • Infra clavicular area; D. Axillary area

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

1. **Normal/Negative:** No abnormalities on visual inspection or palpation.
2. **High Risk:** Target women with family H/o Breast /Ovarian /Colon Cancer, with H/o Chronic Benign Breast Diseases and with personal history of Breast Cancer in the same Breast or the opposite Breast will be categorized under 'High Risk Group' and managed according the screening and management algorithm for breast cancer.
3. **Abnormal:** Definite asymmetrical finding on either visual inspection or palpation. It could be either Probably Malignant or Probably Non Malignant. Presence of discrete hard lump(s) in the breast with or without swelling(s) in the armpit, recent nipple retraction or distortion, skin dimpling or retraction, ulceration, blood stained nipple discharge presence of other lumps will be considered as positive findings on Clinical breast examination and patient will be managed according to the screening and management algorithm for breast cancer.

Table 5.2: Presence of anyone of the signs shall be considered as abnormal

Probably Malignant	Probably Non Malignant
<ul style="list-style-type: none"> ▪ Discrete hard lump in the breast with or without swelling in the armpit ▪ Recent nipple retraction or distortion ▪ Skin dimpling or retraction ▪ Ulceration ▪ Blood stained nipple discharge 	<ul style="list-style-type: none"> ▪ Other lumps in the breast ▪ Non bloody nipple discharge

Figure 5.6: Breast cancer local manifestations

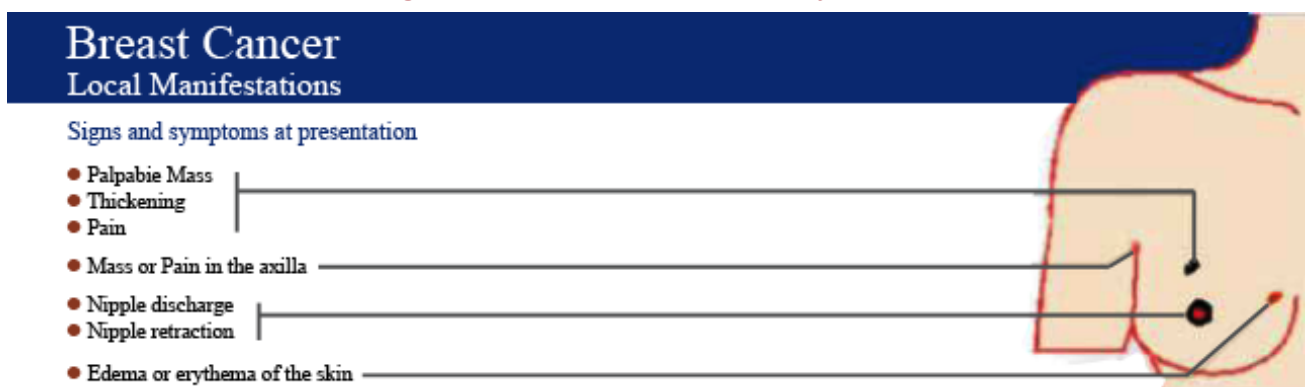
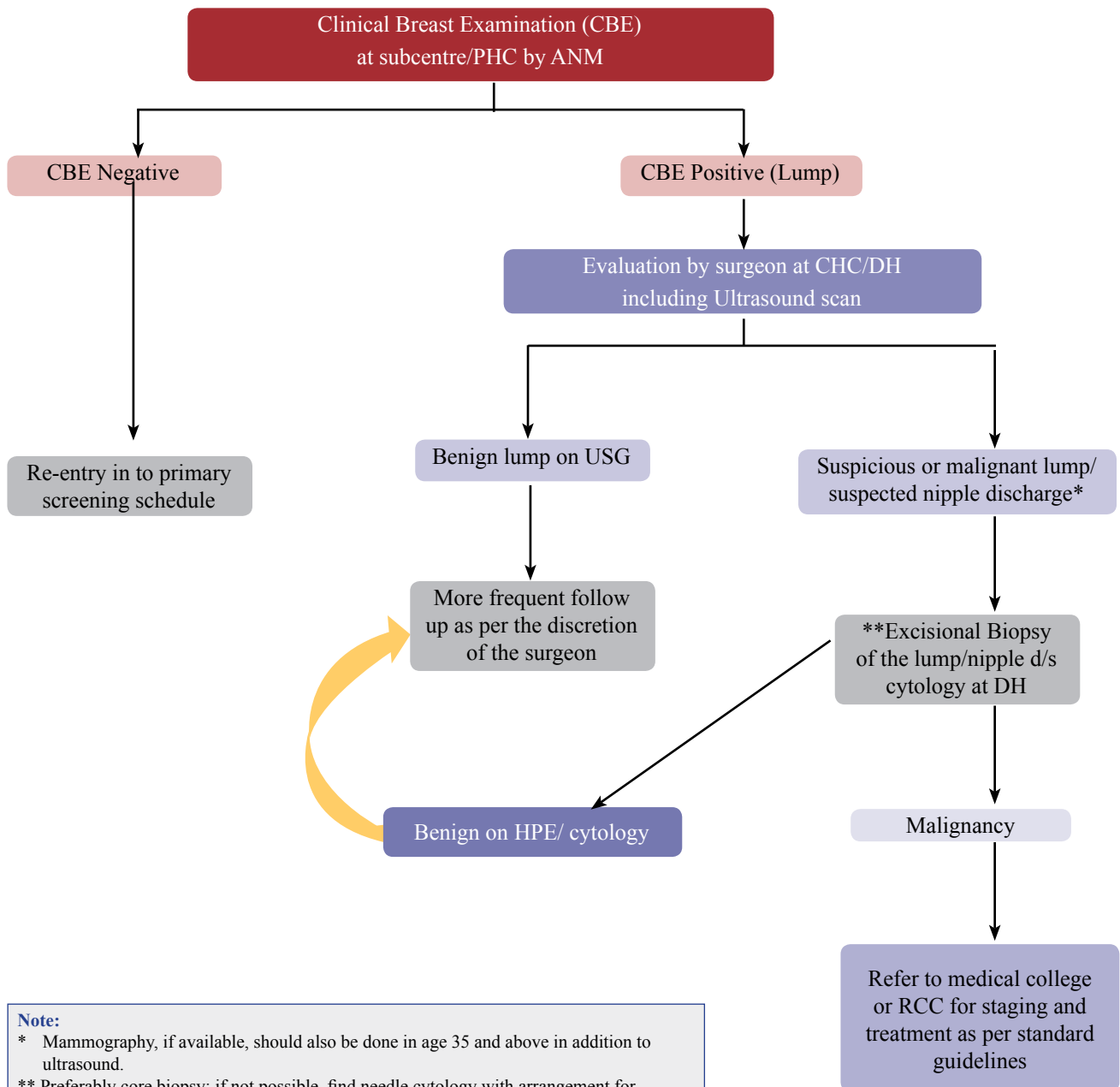


Figure 5.7: Algorithm for Screening and Management of breast cancer



Note:
 * Mammography, if available, should also be done in age 35 and above in addition to ultrasound.
 ** Preferably core biopsy; if not possible, find needle cytology with arrangement for sending to higher level for diagnosis.

Please Note:

MO to have a list of nearest facility there equipped for confirmation and management of Ca breast. He should refer directly the suspected cancer cases to these centres only.

Screening for Oral Cancer

Risk factors

Tobacco chewing is the single most important risk factor for oral cancer. Other risk factors include alcohol use, betel nut chewing, and chronic trauma to oral mucosa by sharp tooth or ill-fitting dentures. Chronic exposure to these risk factors causes changes in the oral mucosa and these changes are visible as pre-cancerous lesions. Over a period of time, malignancy may develop in these lesions.

Pre-cancerous lesions

Pre-cancerous lesions or conditions are local/generalized disturbances that predispose to malignancy in a particular site. Leucoplakia, erythroplakia, palatal changes associated with reverse smoking or beedi smoking and submucous fibrosis are local pre-cancerous lesions. Plummer Vinson syndrome, syphilis, and erosive lichen planus are generalized pre-cancerous conditions. All these conditions are amenable to early diagnosis, and treatment is possible in many cases

Leucoplakia

This is defined as a white patch that cannot be characterized as any other disease clinically or pathologically (Figure 5.8). They can be of 4 types:

- a. Homogeneous leucoplakia: Low risk of cancer
- b. Ulcerated or erosive leucoplakia: High risk of cancer
- c. Speckled or nodular leucoplakia: High risk of cancer
- d. Verrucous leucoplakia: Very high risk of cancer

Two or more types of leucoplakia may be present in the oral cavity at the same time. Confirmatory diagnosis is by biopsy

Figure 5.8: Homogeneous leukoplakia involving dorsum and right lateral border of tongue



Erythroplakia

This is a bright, velvety area sometimes surrounded by faint plaques which cannot be characterized as any other lesion clinically or pathologically (Figure 5.9). About 90% of these lesions show cellular dysplasia or malignancy. The risk of malignancy in erythroplakia is higher than in leucoplakia.

The most common cancer seen in the oral cavity is squamous cell carcinoma. It presents as a painless ulcer, mass or fissure. As the disease advances, patient may have excessive salivation, trismus, and difficulty in chewing, swallowing or cervical lymphadenopathy. Distant metastases are uncommon in oral cancers

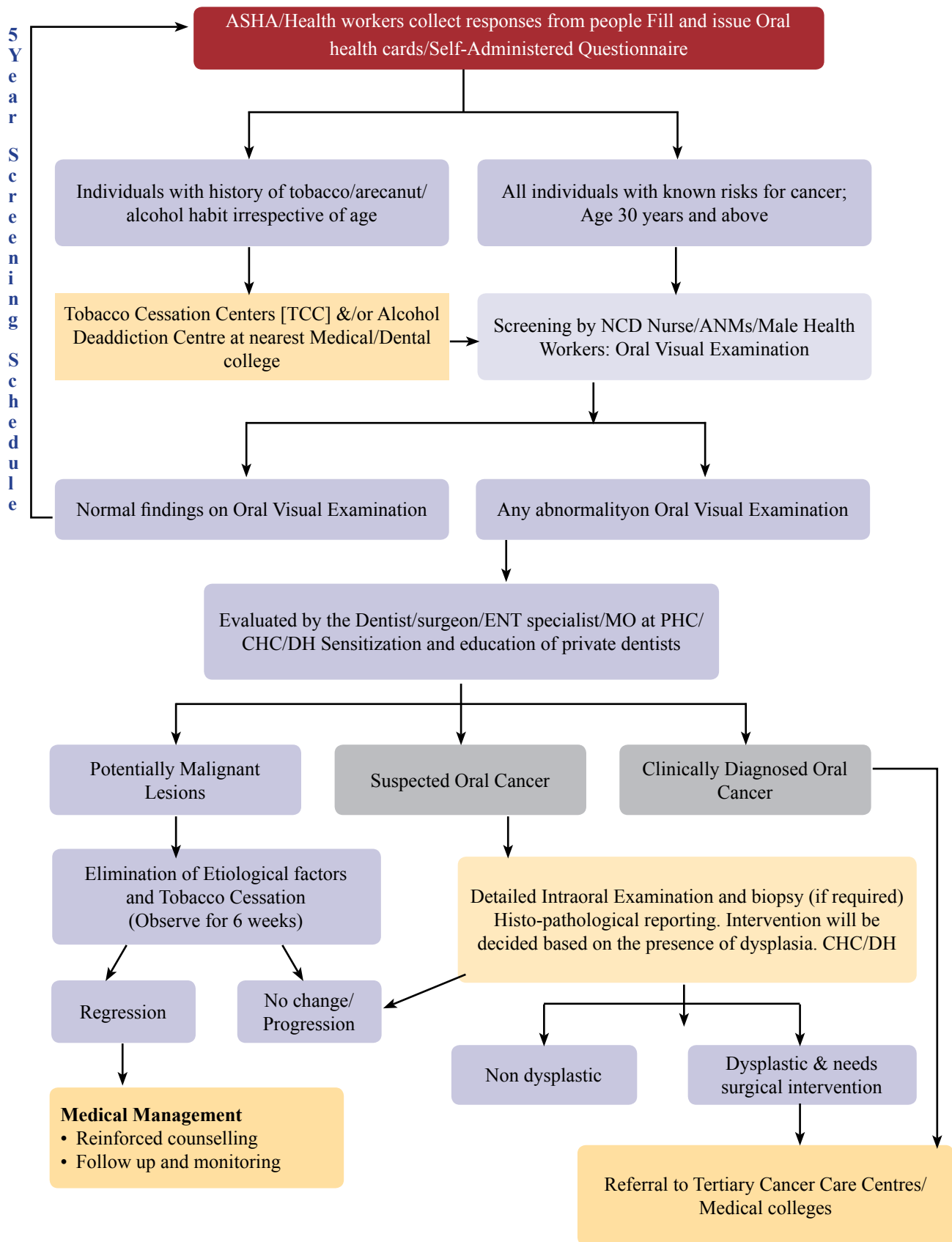
Figure 5.9: Erythroplakia



Inclusion criteria: Any individual aged 30 years and above should be screened at all screening centres

Any abnormal finding on oral visual examination should be considered as positive and patient should be managed according to screening and management algorithm for oral cancer.

Figure 5.10: Algorithm for Screening and Management of oral cancer



Please Note:

MO to have a list of nearest facility there equipped for confirmation and management of Ca breast. He should refer directly the suspected cancer cases to these centres only.

Chapter 6: Monitoring and Supervision

Forms and screening register format for reporting and recording have been prescribed by the Central NCD Cell. They are being used by District, State NCD Cell and various health facilities (Reporting formats and the screening register for SC/PHC are enclosed as annexure). Recording and reporting at all levels need to be aligned with NPCDCS guidelines.

Review meetings of State Programme Managers (NCD) are being organized on a quarterly basis to assess physical and financial progress, and discuss constraints in implementation of the programme. A Management Information System is envisaged in future to be developed to digitalise the information.

Various indicators on NCDs have been included in National Family Health Survey-4 (NFHS-4) and the report of most of the states is already released. ICMR along with AIIMS is also conducting National NCD Risk Factor Survey which will also provide state level data on NCDs.

The responsibility of reporting, flow of information and frequency of reporting is summarized below:

Table 6.1: Responsibility of reporting, flow of information and Frequency of Reporting

Level	Reporting Form	Data generated from	Person responsible	Reporting to	Submission by
Sub-centre	Form 1	ANM Screening Register	ANM of SC	MO I/c PHC	Last day of month
PHC	Form 2	PHC OPD Register	MO I/C PHC	CHC/BPHC	5th of following month
CHC/ BPHC/ SDH	Form 3A	CHC NCD OPD Register	MO I/C CHC NCD Clinic/BPHC/SDH	District. NCD cell	7th of following month
	Form 3B	Compiled all forms 1 & 2			
District (NCD) Hospital	Form 4	District NCD Clinic/ District Hospital Register	MO I/C District NCD Clinic	District NCD cell	7th of following month
District NCD Cell	Form 5A	Compiled all form 3A & 4	Dist. Nodal Officer(NCD)	State NCD Cell	10th of following month
	Form 5B	Compiled all form 3B			
State NCD Cell	Form 6	Compiled all forms	SNO (NCD)	National NCD cell	15th of following month

The overall responsibility for monitoring and supervision of field activities is with the Medical officer of the health facility. Therefore, review of the programme must be an integral part of his monthly review meetings.

Information from these formats is vital since it is utilized for monitoring of the programme, future planning and policy making. Therefore it is of utmost importance that the **information provided/data filled in the formats is accurate, valid and given in the prescribed time frame.**

Medical officer needs to visit the sub-centre where the screening session is being held at least once a month for monitoring the programme activities and supportive supervision of the health functionaries. A standardized

supervisory checklist will facilitate him/her to collect the relevant information for further necessary action. (Annexure 4)

Monitoring indicators for Population Based Screening:

The following indicators would be used to monitor the programme by the medical officer, and these would be synergized with existing records and reports under NPCDCS. Data would also need to be disaggregated by age and sex to enable creation of a data base to facilitate learning and to focus better on programmatic efforts.

Table 6.2: Monitoring Indicators for PBS for Medical Officers

Term	Definition
Coverage with screening	Proportion screened in the previous year out of the total population >30 years (eligible population for screening)
Follow up screened	Those who completed the diagnostic workup of those who were screened positive.
Treatment Rate	Those who are currently on treatment out of those diagnosed with disease in that year
Control Rate	Those that have achieved control values for HTN or DM amongst those that are currently on medication per year.

The Information should also be collected on process indicators to aid in better program management and optimal use of resources, i.e., Drugs/diagnostics stock outs, training status of support staff on program delivery, total number of screening sessions held against planned etc.

Annex I

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

Part A: Risk Assessment				
Question	Range		Circle any	Write score
1. What is your age? (in complete years)	30-39 years		0	
	40-49 years		1	
	≥ 50 years		2	
2. Do you smoke or consume smokeless products such as Gutka; or Khaini ?	Never		0	
	Used to consume in the past / Sometimes now		1	
	Daily		2	
3. Do you consume Alcohol daily?	No		0	
	Yes		1	
4. Measurement of waist (in cm)	Female	Male		
	<80 cm	<90 cm	0	
	80-90 cm	90-100 cm	1	
	>90 cm	>100 cm	2	
5. Do you undertake any physical activities for minimum of 150 minutes in a week?	Less than 150 minutes in a week		1	
	At least 150 minutes in a week		0	
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				
A score above 4 indicates that the person may be at risk for these NCDs and needs to be prioritized for attending the weekly NCD day				

Part B: Early Detection: Ask if patient has any of these symptoms				
B1: Women and Men	Yes/ No	B2: Women only	Yes/No	
Shortness of breath		Lump in the breast		
Coughing more than 2 weeks		Blood stained discharge from the nipple		
Blood in sputum		Change in shape and size of breast		
History of fits		Bleeding between periods		
Difficulty in opening mouth		Bleeding after menopause		
Ulcers /patch /growth in the mouth that has not healed in two weeks		Bleeding after intercourse		
Any change in the tone of your voice		Foul smelling vaginal discharge		
<i>In case the individual answers Yes to any one of the above-mentioned symptoms, refer the patient immediately to the nearest facility where a Medical Officer is available.</i>				

Annexure III

Form 2															
National Programme on Prevention & Control of Cancer, Diabetes, CVDs & Stroke (NPCDCS)															
Reporting proforma for Primary Health Centre (PHC)															
Name of the PHC _____ State _____		Name of the linked Block PHC/CHC _____		District _____											
Month _____		Year _____													
No. of Sub-centres under the PHCs _____				No. of Sub-centres reported during the month: _____											
Part A (Screening for HTN and Diabetes)															
Name Of the Sub Centre / PHC	Total NCD Checkups Done			No. of new persons Suspected for DM and referred for Confirmation			No. of new persons Suspected for HTN and referred for Confirmation			No. of known cases of DM on Follow-up			No. of known cases of HTN on Follow-up		
	Male	Female	Total	Male	Female	Total	Male	Female	Total	Male	Female	Total	Male	Female	Total
PHC															
SC1															
SC2															
SC3															
SC4															
SC5															
SC6															
Total															
Overall Total															
Part B: Screening for Common Cancers															

Name of the Sub Centre/ PHC	No. of persons screened for Cancers			No. of persons suspected and referred to PHC/ CHC/ GH						No. of known Cancer patients		
	Male	Female	Total	Male	Female	Total	Breast	Cervical	Total	Male	Female	Total
Name Of the PHC												
SC 1												
SC 2												
SC 3												
Sub Centre total												
Overall Total												
Signature:												
Name and Designation _____												
Date of reporting _____												
<i>*This report should be generated from PHC OPD screening data and also by compiling data of Form 1 of all sub-centres under the PHC.</i>												
<i>This report should be verified and signed by Medical Officer I/c PHC.</i>												
<i>This report should be sent to Block PHC/CHC by 5th day of every month.</i>												

List of Contributors

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