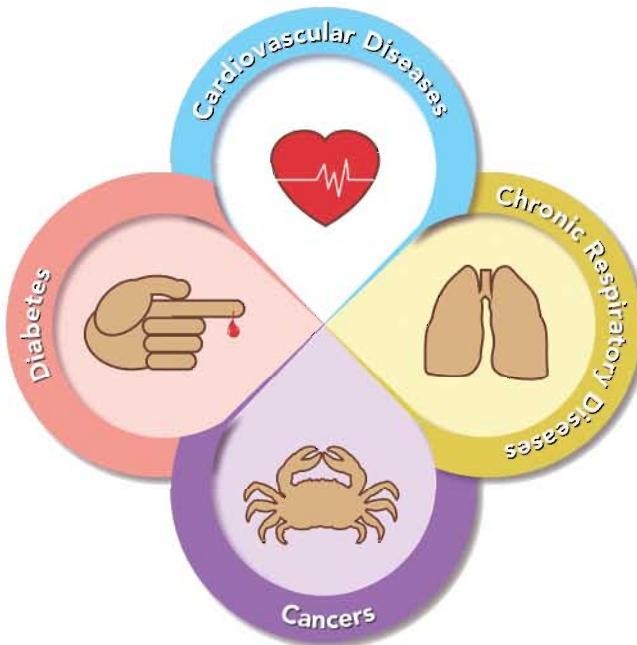




TRAINING OF TRAINER MANUAL FOR

Package of Essential Non-communicable Disease Interventions (PEN)



Together We Can
Prevent and Control
the World's Most Common Diseases

2017

HelpAge

International

Contents

Abbreviations	iii
Foreword	v
1. Introduction	1
2. Objectives of the training manual	2
3. Facts about Non-communicable Diseases	2
3.1 Risk factors in Non-communicable Diseases	2
3.1.1 Behavioural risk factors	2
3.1.2. Metabolic/physiological risk factors	3
3.2 NCDs in the World	3
3.3 NCDs in South-East Asia Region (SEAR)	3
3.4 NCDs in Myanmar	3
4. Package of Essential Non-communicable Disease Interventions (WHO PEN)	5
5. What are PEN intervention activities in townships?	6
6. How to conduct PEN intervention activities in townships	6
7. References	9
8. Annexes	10
Annex (1) – Rapid baseline assessment of NCD situation and health service delivery at the township level (To conduct in the last month of each year)	10
Annex (2) – Yearly action plan for PEN intervention in respective township	14
Annex (3) – Advocacy tools for NCDs	15
Annex (4) – Training Program of PEN Implementation for TMO/TPHO/MO	18
Annex (5) – Training Program of PEN Implementation for BHS	21
Annex (6) – Pre-test and post-test questionnaires for TOT training (TMO / TPHO / MO / THA / THN trainees)	24
Annex (7) – Pre-test and post-test questionaries for BHS trainees	25
Annex (8) – Implementation of PEN protocol (1 and 2) for integrated management of diabetes and hypertension	30
Annex (9) – Detailed guidelines for additional actions for individuals with diabetes and hypertension	43
Annex (10) – Advice to Patients and Families	47
Annex (11) – Instruction for Health Education and Counseling on Healthy Behaviors (to be applied to ALL)	48

Annex (12) – Counseling on Cessation of Tobacco Use - 5 steps	50
Annex (13) – Adherence to Treatment	51
Annex (14) – PEN protocol 3	52
Annex (15) – PEN protocol 4	58
Annex (16) – NCD Screening Forms	66
Annex (17) – Clinical Record for NCDs Patient	69
Annex (18) – NCD Diseases Register	71
Annex (19) – Referral Form in TOT PEN Manual	75
Annex (20) – PEN Scaling up Indicators for Monitoring, Indicator Definitions and Calculation	76
Annex (21) – Supervision Checklist at Township Level	81
Annex (22) – Essential Technologies and Tools for Implementing Essential NCD Interventions in Primary Care	85
Annex (23) – Medication List Used in Management of Asthma and Chronic Obstructive Airway Diseases	89
Annex (24) – How to Use Your Blood Glucose Meter	90
Annex (25) – How to Measure Blood Pressure by Using Various Types of Monitor	92
Annex (26) – Body Mass Index (BMI) Chart for Adults	95
Annex (27) – Measurement of Height, Weight, Waist Circumference and Calculation of BMI	96
Annex (28) – IEC Materials	100
Annex (29) – Various types of Blood Pressure Apparatus	106
Annex (30) – How to take Blood Sample for Testing Blood Glucose Level	110
Annex (31) – NCDs Glossary	111
Annex (32) – Instruction for usage of PEN TOT Manual for MO (Refer to pretest results when using this annex)	113

Abbreviations

ACEI	Angiotensin Converting Enzyme Inhibitor
ACF	Acute Cardiac Failure
ACS	Acute Coronary Syndrome
AMW	Auxiliary Midwife
BP	Blood Pressure
BPMD	Blood Pressure Measuring Device
CHW	Community Health Worker
COPD	Chronic Obstructive Pulmonary Disease
CVD	Cardiovascular Disease
DALYs	Disability Adjusted Life Years
DM	Diabetes Mellitus
EH	Environmental Health
EPI	Expanded Program of Immunization
FBS	Fasting Blood Sugar
GBD	Global Burden of Disease
GI	Gastrointestinal
HT	Hypertension
IDF	International Diabetes Federation
IHME	Institute for Health Metrics and Evaluation
ISH	International Society of Hypertension
LHV	Lady Health Visitor
LMICs	Low and Middle-Income Countries
MCH	Maternal and Child Health
MDGs	Millennium Development Goals
MO	Medical Officer
MW	Midwife
M&E	Monitoring and Evaluation
MI	Myocardial Infarct
NCDs	Non-communicable Diseases
OH	Occupational Health
PEFR	Peak Expiratory Flow Rate
PEN	Package of Essential Non-communicable Diseases
PHC	Primary Health Care
PHS	Public Health Supervisor
RBS	Random Blood Sugar
RH	Reproductive Health
RHC	Rural Health Center
SBP	Systolic Blood Pressure
SDGs	Sustainable Development Goals
SEAR	South-East Asia Region
SH	School Health
TIA	Transient Ischemic Attack
THA	Township Health Assistant
THN	Township Health Nurse
TMO	Township Medical Officer
TOT	Training of Trainer
TPHO	Township Public Health Officer
VHW	Village Health Worker

Foreword

Over the past few decades, Myanmar has been facing mounting public health problems due to high incidence and prevalence of communicable diseases and has tackled and contained it with some success. As a result of demographic and epidemiological transition, Myanmar has to shoulder additional health challenges such as rising trend of Non-communicable Diseases (NCDs). In order to reduce this growing burden of NCDs so as to improve the quality of life of people and for overall national development, it is essential to effectively prevent and control NCDs by way of fielding interventions such as health promotion, early detection, screening and effective treatment of some major NCDs such as Cardio-Vascular Diseases (CVD), Diabetes Mellitus and Cancers. In this context, through collaboration with its Member States, WHO has developed Packages of Essential NCDs protocols to reduce the burden of NCDs.

Myanmar had good experiences in piloting the Packages of Essential NCDs (PEN) in two townships in Yangon Region since 2012. Along with increasing allocation of health budget in the country, the Ministry of Health and Sports has planned to expand the number of PEN townships aiming to cover the whole country in the coming years. This manual was developed for use in capacity building activities for health care providers to improve the quality of NCDs services at their respective areas. Many technical meetings and discussion forums were conducted in developing this manual.

On behalf of the Ministry of Health and Sports, I would like to convey my high appreciation to all stakeholders, like-minded organizations and partners involved in the developmental process of this manual. In particular, I am grateful to the Director-General and the committed staff of the Department of Public Health (DPH) for their continuous support in developing this manual. I have also noted the high enthusiasm and commitment of staff from NCD Unit of the DPH in successfully performing this particular task. I would also like to express my sincere appreciation to faculty members of the University of Public Health, the University of Medicine (2) and officials of the Department of Human Resources for Health for their relentless effort in preparing and reviewing the main portion of this manual. Last, but not the least, I would like to thank HelpAge International and WHO for their technical, financial and other necessary support given to the Ministry of Health and Sports throughout the process in developing this manual.

*My
2.3.17*

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1. Introduction

This manual for the training of trainers is intended to develop the skills of a core group of trainers to design and organize their own training programs for the Package of Essential Non-communicable Disease (PEN) interventions appropriate to the training participants that they are targeting. This manual applies to trainers working at the Central, Regional / State and Township level.

Non-communicable Diseases (NCDs) are one of the major health and development challenges of the 21st century, in terms of human suffering and damage to the socio-economic fabric of countries. As the NCD burden is growing rapidly, it is exceeding the burden of communicable and maternal and child health problems in countries all over the world. Myanmar faces a dual burden of both communicable and non-communicable diseases. Myanmar is now prioritizing NCDs in its National Health Plan (2011-2016) with the aim of preventing, controlling and reducing disease, disability and premature deaths from these diseases.

To support countries in addressing these challenges, WHO developed Package of Essential Non-communicable Disease (PEN) interventions following the adoption of the WHO Action Plan for the Global Strategy for the Prevention and Control of Non-communicable Diseases (NCDs) at the World Health Assembly (2008). The WHO PEN provides guidance and tools to assess needs and capacity, implement essential NCD interventions, evaluate impact, strengthen health systems and human resource capacity in primary health care with a special focus on primary care level. The components of PEN include protocols for clinical diagnosis and treatment, tools for risk prediction of heart attacks and strokes, guidance on minimum requirements for essential medicines and affordable technologies, standards and indicators to measure progress of implementation and impact of WHO PEN¹. In Myanmar, WHO PEN implementation began in 2012-2013 in two pilot townships, Hlegu and Hmawbi in Yangon Region.

This manual is based on “Implementation tools, Package of Essential Non-communicable Disease Interventions for Primary Health Care in Low-resource Settings (WHO 2013)²” adapted to the Myanmar context by applying learning from the PEN expansion project in Hmawbi and Helgu townships. It provides the basic principles, procedures and policies for planning, and disease control at the local level. It further specifies the expected roles and duties of medical officers at various levels and provides guidance on the essential policy and program elements which include promoting healthy lifestyle, building coalitions and partnerships, and strengthening health systems to prevent and control of common NCDs.

2. Objectives of the training manual

- (1) To improve knowledge of NCD trends, burdens, as well as systems for management and monitoring of NCD services for Township Medical Officers (TMOs), Township Public Health Officers (TPHOs), Medical Officers (MOs). The manual can also be used for training of Basic Health staff (BHS), TMOs, TPHOs and MOs
- (2) To equip trainers to train BHS to conduct PEN protocols at the primary care level health centers
- (3) To equip trainers to train in processes to conduct PEN scaling up monitoring, supervision and evaluation activities

After training, TMOs, TPHOs and MOs will be able to:

- (1) Carry out PEN scaling up activities effectively
- (2) Develop an action plan for PEN in townships
- (3) Analyze Township Health Systems and the NCD health situation in general population
- (4) Conduct NCD advocacy in townships
- (5) Train basic health staff to follow protocols
- (6) Perform monitoring, supervision and evaluation activities of PEN scaling up project

3. Facts about Non-communicable Diseases

Non-communicable Diseases (NCDs) are defined as diseases of long duration, and are generally slow to progress, largely caused by unhealthy lifestyles or risky behaviors: tobacco use, unhealthy diet, insufficient inactivity and harmful use of alcohol. The presence of these risky behavior leads to metabolic changes: overweight / obesity, raised blood pressure, raised blood glucose and raised cholesterol levels. Left uncontrolled, these metabolic conditions result in chronic NCDs.

3.1 Risk factors in Non-communicable Diseases

Risk factors are defined as “An aspect of personal behavior or lifestyle, an environmental exposure, or a hereditary characteristic that is associated with an increase in the occurrence of a particular disease, injury, or other health condition.” In non-communicable diseases, there are two categories of risk factors: behavioral risk factors and metabolic or physiological risk factors.

3.1.1 Behavioral risk factors

Tobacco use, physical inactivity, unhealthy diet and the harmful use of alcohol increase the risk of NCDs. Tobacco accounts for around 6 million deaths every year (including from the effects of exposure to second-hand smoke) and this figure is projected to increase to 8 million by 2030. About 3.2 million deaths annually can be attributed to insufficient physical activity. More than half of the 3.3 million annual deaths from harmful drinking are from NCDs. In 2010, 1.7 million annual deaths from cardiovascular causes have been attributed to excess salt / sodium intake.

3.1.2. Metabolic / physiological risk factors

Behavioral risk factors may lead to four key metabolic/physiological changes that increase the risk of NCDs: raised blood pressure, overweight/obesity, hyperglycemia (high blood glucose levels) and hyperlipidaemia (high levels of fats in the blood). In terms of attributable deaths, the leading metabolic risk factor globally is elevated blood pressure (to which 18% of global deaths are attributed) followed by overweight and obesity and raised blood glucose. Low and middle-income countries are witnessing the fastest rise in young children with overweight. There are also major determinants of NCDs including poverty, illiteracy, poor health infrastructure and social inequities on one side. On the other hand, demographic transition in terms of increasing life expectancy and urbanization and globalization are increasingly led to NCDs.

3.2 NCDs in the World

The 2010 WHO Global Status Report on Non-communicable Diseases (NCDs) showed that they were now the most important causes of mortality worldwide. Indeed, more than 36 million people died from NCDs in 2008, 38 million in 2012. Main causes of NCD deaths in 2008 are cardiovascular diseases (48%), cancers (21%), chronic respiratory diseases (12%), and diabetes (3%). Nearly 80% of these deaths occurred in low and middle-income countries (LMICs), where, on average, they now exceed communicable diseases as the major cause of disease burden. Even in countries where infectious diseases are the main health problems, NCDs are growing rapidly. NCDs are expected to exceed communicable, puerperal, prenatal and food borne diseases on the list of leading causes of death in all countries by 2020.

3.3 NCDs in South-East Asia Region (SEAR)

Non-communicable Diseases (NCDs) are top killers in the South-East Asia Region (SEAR), causing 7.9 million deaths annually; the number of deaths is expected to increase by 21% over the next decade. NCDs kill people at a relatively young age in SEAR compared to the rest of the world; one-third (34%) of the 7.9 million deaths in SEAR occur in those below the age of 60 years compared to 23% in the rest of the world. Cardiovascular diseases (coronary heart disease and stroke), cancers, chronic respiratory diseases and diabetes account for the majority of NCD morbidity and mortality. Mortality and morbidity from major NCDs are on the rise and will continue to be so in the future⁵.

3.4 NCDs in Myanmar

Myanmar, as one of the Member States of the WHO South-East Asia Region has been engaging actively in the combat against these preventable non-communicable diseases and also within the “South-East Asia Regional Framework for the Prevention and Control of NCDs”.

According to **Non-communicable Diseases Country Profiles 2014**, NCDs are estimated to account for 59% of total deaths. The probability of dying between ages 30 and 70 years caused by four main NCDs is 24%. Apart from four major NCDs, other non-communicable diseases/conditions of public health importance in Myanmar are

- ❖ Accidents and injuries
- ❖ Disabling conditions (Blindness, Deafness, Community based rehabilitation)
- ❖ Mental Health
- ❖ Substance abuse
- ❖ Snake bite

The prevention and control program of NCDs in the country 2013 - 2020 is based on WHO recommendations on the need for concerted and coordinated actions, improved integration into NCD control at the national level, based on the Political Declaration of the UN High level Meeting on NCDs and the new policy of WHO/EURO “Health 2020”. The main directions of this program implementation are aligned with the activities, envisaged in the National Health Sector Reform Program for 2013 - 2020⁶.

According to Global Burden of Disease (GBD) 2010 report, the five risk factors that account for the most DALYs lost in Myanmar are dietary risks, tobacco smoking, household air pollution from solid fuels, high blood pressure and high fasting plasma blood sugar (IHME, 2010). Cardiovascular diseases, cancers, diabetes and chronic respiratory diseases are reported to be major contributing factors to the NCD burden in Myanmar. WHO (2011c) indicates that NCDs contribute to approximately 40% of all deaths in Myanmar. Comparing burden of disease (BOD) in 1990 with that in 2010, NCDs and injuries are generally on the rise, while communicable, maternal, neonatal and nutritional causes of DALYs are generally declining⁶.

STEPS survey for Yangon Division (2003 - 2004) reported the prevalence of diabetes as 11.8% and those of urban and rural areas as 13.9% and 7.3% respectively.

National STEPS Survey (2009) recorded associated risk factors for diabetes and the prevalence of smoking was 33.6% in males and 6.1% in females, the prevalence of hypertension was 31% in males and 29.3% in females, the prevalence of overweight was 21.85% in males and 23.07% in females, and the prevalence of obesity was 4.35% in males and 8.45% in females among the sample population of 8757 adult. Although it was a national survey, it included only the survey on the behavioral and physiological risk factors and could not report the prevalence of diabetes which required laboratory measurement of blood glucose.

National Survey on the Prevalence of Diabetes and Risk Factors for Non-communicable Diseases conducted in 2014 reported the prevalence of diabetes as 10.5% for the adult population aged between 25 and 64 years. It also reported the prevalence of risk factors for major non-communicable diseases. The prevalence of hypertension for both sexes was 26.4%. Percentage who currently smokes tobacco was 26.1% whereas percentage who currently drinks alcohol was 19.8%. The prevalence of overweight ($BMI > 25 \text{ kg/m}^2$) and obesity ($BMI > 30 \text{ kg/m}^2$) were 22.4% and 5.5% respectively. This survey was an extensive survey showing the magnitude of the problem of diabetes and risk factors for major NCDs for the whole country. The survey showed the higher prevalence of diabetes than the

estimated prevalence of diabetes by the International Diabetes Federation (IDF). Based on this prevalence, the total number of diabetes can be more than 2.5 million in Myanmar⁷.

Prevalence of diabetes and risk factors for non-communicable diseases in Myanmar according to STEPS Survey (2014)⁸

Risk Factors	Male	Female	Both Sex
Raised Blood Pressure	24.7%	28%	26.4%
Raised Blood Cholesterol (≥ 5.0 mmol / L or 190 mg / dl)	30.9%	42.5%	36.7%
Raised Blood Glucose (FBS ≥ 7 mmol / L or 126 mg / dl, 2 HPP ≥ 11.1 mmol / L or 200 mg / dl)	9.1%	11.8%	10.5%
Overweight (BMI ≥ 25 kg / m ²)	14.1%	30.8%	22.4%
Obesity (BMI ≥ 30 kg / m ²)	2.6%	8.4%	5.5%
Smoking	43.8%	8.4%	26.1%
Smokeless Tobacco (Betel nut chewing)	62.2%	24.1%	43.2%
Current Alcohol Drinkers	38.1%	1.5%	19.8%
Heavy Episodic Drinkers	20.3%	0.3%	10.3%
Insufficient Physical Activity	12.5%	18.8%	15.7%
≥ 3 Risk Factors	18.3%	20.9%	19.6%
10 years CVD risk	8.5%	15.7%	12.1%

4. Package of Essential Non-communicable Disease Interventions (WHO PEN)

WHO developed the Package of Essential Non-communicable Disease Interventions (WHO PEN) for Primary Care in Low-Resource Settings, which is an innovative and action-oriented response to the problems and challenges of care for the people with NCDs. WHO (PEN) will provide guidance and tools to assess needs and capacity, implement essential NCDs interventions, evaluate impact and strengthen health systems and human resource capacity in PHC with a special focus on primary care level.

WHO PEN is the minimum standard for NCDs to strengthen national capacity to integrate and scale up care of heart disease, stroke, cardiovascular risk, diabetes, cancer, asthma and chronic obstructive pulmonary disease in primary health care in low - resource settings. It includes protocols for clinical diagnosis and treatment, tools for risk prediction of heart attacks and strokes, guidance on minimum requirements for essential medicines and affordable technologies, standards and indicators to measure progress of implementation and impact of WHO PEN.¹

In Myanmar, we will use Myanmar PEN Protocol based on WHO PEN package for treatment and referral of NCDs (especially diabetes and hypertension in the primary health care).

5. What are PEN intervention activities in townships ?

PEN intervention activities would be conducted to achieve the goals of PEN i.e. closing the gap between what is needed and what is currently available to reduce the burden, healthcare costs and human suffering due to major NCDs by achieving higher coverage of essential interventions in LMIC.

Key PEN intervention activities are:

- a) Rapid Assessment of Township Health Department (Township Health Facilities) and NCD Health Situation
- b) Development of PEN intervention action plans in townships
- c) Conducting advocacy meetings or seminars that discuss NCD issues including “Myanmar National PEN Scaling up Project Plan” and highlight the WHO NCD action plan
- d) Training of Medical Officers and Basic Health staff
- e) Implementation of PEN protocol 1, 2, 3 and 4 (protocol 3 should be implemented after provision of equipment and drugs) in townships
- f) Regular supervision / monitoring and evaluation of PEN scale up activities by central and regional level supervisors and township level staff (Township Medical Officers / Township Public Health Officers / Medical Officers)

6. How to conduct PEN intervention activities in townships

PEN intervention activities in townships should be carried out as follows;

Step 1 – Team formation and rapid assessment

After the formation of intervention team, use the rapid assessment (Annex 1) to assess the Township Health Department (Township/Station Hospital/Health Center) and NCD situation. The assessment’s emphasis is health manpower, provision of essential minimal equipment, tools and medicines, type of health care service and administration of the health facility.

Step 2 – PEN action plan

Based on the results of step 1, develop a plan of action for PEN intervention in an identified township. The plan should align with the township micro-plan. (Refer to Annex 2)

Step 3 – Advocacy

Before implementing PEN scaling up in a township, advocacy to secure the support and to draw in local knowledge of the township/ward and village administrators, community leaders, personnel from health related departments is needed. The emphasis of advocacy

is on the situation of NCDs problem in Myanmar, PEN in Brief and benefit of PEN interventions. (Refer to Annex 3)

Step 4 – Training of Trainers

Training team members from each township will participate in this training of trainers as trainees. They will, in turn, conduct the training of basic health staff and supervise the PEN activities in their respective township. (Refer Annex 4 for MO training program and Refer Annex 5 for other BHS training program)

Pre-test and post-test questions are mentioned as Annex 6 for MO and Annex 7 for BHS.

Step 5 – Implementation of Myanmar PEN protocol 1, 2, 3, and 4.

In the initial phase, integrated management of diabetes and hypertension by using PEN protocol 1 and protocol 2 will be implemented. Protocol 3 will not be implemented at this time because pulse oximeters, nebulizers, spacers for inhalers, are not available. For protocol 4, we will raise the awareness of breast cancer and cervical cancer in women and improve referrals where there are symptoms and signs suggesting carcinoma.

PEN protocol 1 involves initial selection of persons to be treated and 5 major actions (actions 1 to 5) during clinic visits. It also emphasizes opportunistic screening at NCD corners at hospitals, mobile clinics and RHC/Sub-RHC by using WHO/ISH risk prediction chart with Action 3. Action 4 is applicable for referral of patient if indicated. All of the patients must be counseled and treated according to Action 5 which advises patient and family specifically on diabetes.

PEN protocol 2 consists of health education and treatment adherence at every visit. (Refer to Annexes 8 to 13).

PEN implementing activities (PEN protocol) as included as annexes in this manual. Applying the relevant annex correctly in PEN interventions will achieve desired goal.
(Refer to Annex 32)

Step 6 – Supervision for implementation

Supervision is an important activity to conduct after training of PEN Protocols. It should be conducted as a well-organized systematic activity participating by health managers from the Township, District, Regional and Central levels and started soon after health personnel have been trained on the WHO PEN. Besides supervision should be an educational process and two way interaction rather than one way examining and criticizing of a health worker's performance.

The supervision of PEN scaling up activities should be carried out at three levels viz. first level (health centers), second level (Township Health Departments) and third level

(Regional Health Departments). PEN scaling up activities at the first level i.e. health centers should be supervised by Township level health staff such as TMO/ TPHO/ MO etc. and at the second level i.e. Township Health Departments should be supervised by Regional level health staff such as Dy. Regional Health Directors/ Assistant Regional Health Directors/ Regional Officers responsible for NCD control. Similarly, NCD Program Director/ Dy. Director from the central level will supervise the first, second and third level health facilities. The supervision of first level and second level health facilities should be carried out every three months depending on the local situation and supervisors should visit the facilities as a team.

During the supervision visits, the following areas should be supervised:

- (1) Health manpower at the health facility
- (2) Minimum essential equipment list
- (3) Essential medicine list
- (4) Available health services
- (5) Available laboratory services
- (6) Referral of patients
- (7) Utilization of services provided
- (8) Record keeping
- (9) Financing and administration
- (10) Community participation

Completeness and accuracy of data recorded and collected in Primary Health Care facilities is crucial for supervisory visits and the information gathered from the facility should be used for identification of priority problems, plan training of the health staff and provision of regular supply of consumables and essential medicines at the local level. Supervision report should be sent to higher levels to take appropriate action to improve program management. Supervision checklist at the second (Township) level is mentioned in annex (21).

STEP 7 – Monitoring of PEN Project Implementation

Progress of PEN Scaling up Project activities will be carried out against the objectives of set by the project. Indicators and targets are also developed for the monitoring purpose. Information gathering for measurement of specific indicators will be responsibility of basic health staff and TMO/ TPHO/ MO at the Township level. At the same time Regional and Central level health managers should take responsibilities of supervision for data collection. Data for development of indicators will come from different types of records and reports used for data collection. Indicators, targets and measurement methods for monitoring PEN Project implementation are described in Annex (20).

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8. Annexes

Annex (1) Rapid baseline assessment of NCD situation and health service delivery at the township level (To conduct in the last month of each year)

Name of Township -----

Region/ State -----

(1) Township Population Profile

Age group	Male	Female	Total
0 - 1			
1 - 5			
6 - 25			
26 - 40			
41 - 70			
71 +			
Total			

(2) Township Health Facility

Category	Number
Township Health Department	
Township Hospital	
Station Hospital	
Maternal and Child Health Unit	
Urban Health Center	
School Health Team	
Rural Health Center	
Sub-rural Health Center	
Station Health Unit	
Total	

(3) Health Manpower at Township Level (Use another table for specific facility)

Category	No. of staff sanctioned	No. of staff appointed	No. of staff working
TMO			
TPHO			
MO / AS			
THN			
HA 1			
Nurse			
HA			

PHS (1)			
LHV			
MW			
PHS (2)			
AMW			
CHW			
Total			

(4) Minimum Essential Equipment List at Township Level
(Use another table for specific facility)

Equipment	Function-ing	Non - functioning	Maintenance (+) or (-)	Remark
a. Blood pressure measuring devices (BPMD) ♦ Mercury ♦ Aneroid ♦ Digital				
b. Oxygen cylinders				
c. Oxygen concentrator				
d. Weighing machines				
e. ECG machines				
f. Measuring tape				
g. Nebulizer				
h. Peak flow meter				
i. Stethoscope				
j. Thermometer				
k. Pulse oximeter				
l. Spacer				
m. Glucometer with strip				
n. Ophthalmoscope				
o. WHO CVD risk score chart				

(5) Essential Medicine List at Township Level

(Use another table for specific facility)

Generic Medicines	Always available	Sometimes available	Not available at all
Gliclazide			
Metformin			
Amlodipine			
Atenolol			
Enalapril			
Aspirin			
Atorvastatin			
Other drugs			
1.			
2.			
3.			
4.			

(6) Available Health Services at Township Level

(Use another table for specific facility)

Are the following procedures being conducted at the facility when needed?

- a) Administration of oxygen (via mask or tube) Yes No, why not?
- b) Administration of intravenous (IV) fluids/drip Yes No, why not?
- c) IV injection Yes No, why not?
- d) Intramuscular (IM) injection Yes No, why not?
- e) Subcutaneous injection Yes No, why not?
- f) Electrocardiogram (ECG) Yes No, why not?
- g) Cardiopulmonary resuscitation Yes No, why not?
- h) Manual ventilation with a bag valve mask resuscitator (ambu-bag) Yes No, why not?
- i) Visual acuity examination Yes No, why not?
- j) Examinations for neuropathy with knee hammer / tuning fork, etc. Yes No, why not?
- k) Peak flow test Yes No, why not?
- l) Ophthalmoscopy Yes No, why not?
- m) Nebulizer Yes No, why not?

(7) Available Laboratory Services at Township Level
(Use another table for specific facility)

Type	At facility	At referral	Both
Urine albumin/protein testing			
Urine glucose / sugar			
Blood sugar			
Blood cholesterol			

(8) Referral of Patients

A. Number of referral for NCD per year _____

B. Referral pathway (Describe the referral system)

C. Distance to nearest referral institution _____ miles

D. Most frequent means of transport _____

E. Ambulance service available (Y) or (N) _____

F. Reason for referral [further management (acute/emergency/severe) /additional test]

G. Feed Back Response (Y) or (N) _____

(9) Financing and Administration

A. Were the services of NCD delivered free or paid?

B. If NCD services were paid, what is the type of payment? _____ (Partial/Full)

C. Is there any contribution from the community?
Amount of contribution per year? _____

(10) Community participation

A. Is there any social mobilization for NCDs services (Yes or No)? _____

B. Who are the Key Stakeholders?

C. What type of support given by community?

Annex (2) Yearly action plan for PEN interventions in respective township

Activities	Responsible person	Target population	Time frame	Materials required
Situation analysis of Township health system and NCDs health situation	TMO/ TPHO, MO, THN, HA1 and other health staff	Age \geq 40 yrs population in the township	Within 2 weeks	Rapid baseline assessment of NCD situation and health service delivery at township level
Advocacy meeting	TMO/TPHO and Training Team	Township authority, Key stakeholders	1 day	Advocacy tools Annex 3
NCDs training for BHS	Training team	BHS	2 days	TOT Manual for MO and BHS
Information Sharing, Health Education, Counseling, NCDs screening/ Investigation, NCDs treatment and Referral	TMO / TPHO, MO, THN, HA 1, BHS, VHW and AMW	BHS, Community members	The whole years, as much as possible	TOT Manual for MO and BHS
Monitoring and supervision	TMO / TPHO and Training Team	BHS	Quarterly	Annex 18, 19, 21, 22
Evaluation	TMO / TPHO and Training Team	BHS	Annually	Annex 18, 19, 21, 22
Reporting	TMO / TPHO	BHS	Quarterly and Annually	Annex 18, 19

Annex (3) Advocacy tools for NCDs

Advocacy

In order to implement PEN scaling up in the township, it is necessary to advocate township / ward or village administrators, community leaders, personnel from health related departments to begin the process of scaling up using existing knowledge of current situation.

Objectives of the advocacy are:

- (1) To promote participation of PEN implementation by the local leaders, authorities, government staff and community
- (2) To obtain commitment from the community to achieve the targets sets for PEN scaling up

What to be advocated ?

In brief, there are the burden of non-communicable diseases in Myanmar, Process of WHO PEN intervention and health and economic benefit gained by implementing NCDs prevention and control activities. Detail guidelines are shown as follow;

Major non - communicable diseases in Myanmar

In Myanmar estimated percentage of deaths by NCDs in 2012 is 59% and cardiovascular diseases account for one - fourth of all deaths. Fifty four percent of all NCD deaths are among those aged less than 70 years. In case of cancer, top 3 sites in women are breast, cervix and lung and in man are lung, liver and stomach. Commonest risk factors that cause NCDs are smoking (26.8%), overweight (male 16%, female 31%), high blood pressure (27%), raised blood cholesterol (35%), and alcohol drinking (12.8%).

WHO has developed the Package of Essential Non-communicable Disease Interventions (WHO PEN) for Primary Care in Low-Resource Settings, which is an innovative and action-oriented response to the problems and challenges of care for the people with NCDs. Non-communicable Diseases (NCDs) are a group of gradually progressing, largely preventable diseases of long duration. Four main NCDs: cardiovascular diseases, cancer, chronic respiratory (lung) diseases and diabetes account for the majority of burden. These NCDs result from numerous common modifiable risk factors such as tobacco use, physical inactivity, unhealthy diet and harmful use of alcohol. NCDs are currently the leading causes of preventable mortality and disability in the world, accounting for two out of every three deaths. (WHO SEARO docket)

PEN interventions

PEN interventions include methods for early detection of NCDs, and their diagnosis using inexpensive technologies, non-pharmacological and pharmacological approaches for modification of NCD risk factors and affordable medications for prevention and treatment of heart attacks and strokes, diabetes, cancer and asthma. Although there are possible benefits of these interventions, such as reduction in medical care cost, improved quality of life and productivity, there are substantial gap in implementation of these interventions due to weak health system.

Benefit of PEN interventions

About 80% of heart diseases and stroke, 80% of type II diabetes and over 30% of cancers can be prevented or delayed by eliminating the common risk factors for NCDs such as tobacco use, physical inactivity, unhealthy diet and harmful use of alcohol. To address NCDs effectively, WHO recommended wide scale implementation of a core set of proven, multisectorally involved interventions that are effective and affordable. These interventions are also referred as the “best buys”. In low and middle-income countries (LMICs), total annual cost of implementing “best buys” to address NCDs is US\$11.4 billion but an average loss from NCDs in these countries are nearly US\$500 billion annually. In health terms, the return on this investment will be many millions of premature deaths averted. (When you invest one hundred thousand kyats (1 lakh) , you prevent the loss four million three hundred forty thousand kyats (43.4 lakh) annually in economic term) (WHO SEARO docket)

How to advocate PEN

Township medical officer / Township public health officer is most responsible person to advocate township / ward or village administrators, community leaders, personnel from health related departments by means of conducting advocacy meeting / workshop / focal group discussion and distributing NCDs pamphlets / Leaflets / Posters / Billboards to disseminate information.

Advantages and disadvantages of advocacy methods and information sharing

Method	Advantages	Disadvantages
Meeting at community/beneficiaries	<ul style="list-style-type: none"> • No need to take the time to conduct field visits • Two-way communication, so may be interactive 	<ul style="list-style-type: none"> • Needs to be located not far from community area • Efforts from community members to come to the meeting place
Meeting at hospital/health center/ health service	<ul style="list-style-type: none"> • Community members can get an immediate response • Comfortable to ask information • Majority of population can participate 	<ul style="list-style-type: none"> • Efforts from community members to come to the hospital • Unsure that community members would proactively seek information • Community members potentially uncomfortable to ask information in an organization • Need to take the time / resources to conduct field visits
Posters and leaflets distribution	<p>Accessible anytime</p> <ul style="list-style-type: none"> • Wide coverage of literate community members • Photos and cartoons can be used alongside text to communicate in an engaging and interesting way • Consistency of message 	<p>Language issues Literacy rate</p> <ul style="list-style-type: none"> • Misuse of posters and leaflet (like decoration of room with pamphlet, etc.) • One way communication method so potential for misunderstanding • Need to modify and reprint when the project changes
Information board	<p>Cost effective</p> <ul style="list-style-type: none"> • One board can contain a significant amount of information • Not time consuming • Large outreach boards can be handed over to the community at the end of the project 	<ul style="list-style-type: none"> • Boards may not catch the attention of community members • Boards don't cover all areas • Boards can be easily damaged • One way communication method so potential for misunderstanding • Time and effort to keep the boards updated
Focal group discussion (FGD)	<p>In-depth discussions</p> <ul style="list-style-type: none"> • Effective feedback and responses • Inclusion of marginalized people • Opportunity to build trust with community members 	<ul style="list-style-type: none"> • Might be difficult to motivate community members to participate • Language barrier • Need appropriate facilitator (e.g. female facilitator for female FGD)

Annex (4) Training Program of PEN Implementation for TMO/TPHO/MO

Day 1

Topic	Time - frame	Method	Materials	Facilitator's note
Overview of NCDs	30 mins	Lecture and Discussion	TOT Manual for MO	Overview of NCDs : Prevention and control of NCDs, Burden of NCDs
PEN intervention	30 mins	Lecture and Discussion	TOT Manual for MO	PEN
Rapid assessment of township health system / hospital and NCD health situation	30 mins	Demonstration and Group work	TOT Manual for MO	Annex 1
Integrated management of Diabetes and Hypertension a. Selection of persons to be treated b. Action 1: Ask about c. Action 2 : Assess (Physical examination) d. Action 3: Estimation of cardiovascular risk using WHO / ISH risk prediction chart	60 mins	Demonstration Questions and Answers	1. TOT Manual for MO 2. BHS Manual	Pen protocol 1 Annex 8
e. Action 4 : Referral criteria for all visit f. Action 5 : Counseling and treatment including additional actions for individual with diabetes	60 mins	Demonstration Questions and Answers	1. TOT Manual for MO 2. BHS Manual	Pen protocol 1 Annex 8

Diabetes & Hypertension management				Annex 9
Health education and counseling to be healthy behavior a. Advise to patients and families b. Advice specific for diabetes c. Educate your patient to 1. Take regular physical exercise 2. Eat a heart healthy diet 3. Stop tobacco and harmful use of alcohol d. Counseling on cessation of tobacco use - 5 steps (5A)	60 mins	Demonstration Individual practice	1. TOT Manual for MO 2. BHS Manual	Pen protocol 2 Annex 10 Annex 11 Annex 12
Adherence to treatment Medicines used in diabetes and hypertension Medicines use in asthma and COPD	60 mins	Lecture and Discussion	TOT Manual for MO	PEN Protocol 2 Annex 13 Annex 22 Annex 23
Management of asthma and exacerbation of asthma Management of COPD and exacerbation of COPD	60 mins	Lecture and Discussion	TOT Manual for MO	PEN Protocol 3 Annex 14

Day 2

Topic	Time - frame	Method	Materials	Facilitator's note
<ul style="list-style-type: none"> Assessment and referral of women with suspected breast cancer at primary health care level Assessment and referral of women with suspected cervical cancer at primary health care level Facts about oral cancer 	60 mins	Lecture and Discussion	TOT Manual for MO	PEN Protocol 4.1 Annex 15.1 Annex 15.2 Annex 15.3
Use of patient's record and register	30 mins	Demonstration and Group work	TOT Manual for MO	Annex 16, 18 and 19
Use of referral form	15 mins	Demonstration and Group work	TOT Manual for MO	Annex 17
Measurement of height and weight	30 mins	Demonstration and Group work		Annex 27
Use of glucometer and blood pressure monitoring machine	30 mins	Demonstration and Group work	TOT Manual for MO	Annex 25 Annex 26
Monitoring and evaluation	30 mins	Discussion		Annex 21
Preparation of township level report	30 mins	Discussion	TOT Manual for MO	Annex 20
Uses of PEN TOT Manual	30 mins	Discussion	TOT Manual for MO	Annex 32
Group Exercise on Township NCDs action Plan, NCDS Advocacy & Usage of NCDs manual	60 mins	Group work		
Presentation & Discussion on Group Exercises	60 mins	Discussion		
Competency test for PEN	15 mins		TOT Manual for MO	Annex 6

Note: Different types of training methods such as brainstorming, focus group discussion, powerpoint presentation, role play, individual practice, group work can be used.

Annex (5) Training Program of PEN Implementation for Basic Health Staff

Day 1

Topic	Time - frame	Method	Materials	Facilitator's note
Overview of NCDs	30mins	Lecture and Discussion	TOT Manual for MO	Overview of NCDs: Prevention and control of NCDs, Burden of NCDs
PEN intervention	30 mins	Lecture and Discussion	TOT Manual for MO	PEN
Integrated Management of Diabetes and Hypertension a. Selection of persons to be treated. b. Action 1 : Ask about c. Action 2 : Assess (Physical examination) d. Action 3 : Estimation of Cardiovascular Risk Using WHO / ISH Risk Prediction Chart	60 mins	Demonstration Questions and Answers	1. TOT Manual for MO 2. BHS Manual	PEN protocol 1 Annex 8
e. Action 4 : Referral criteria for all visit f. Action 5 : Counseling and treatment including additional actions for individual with diabetes	60 mins	Demonstration Questions and Answers	1. TOT Manual for MO (Protocol 1) 2. BHS Manual	PEN Protocol 1 Annex 8

Diabetes & Hypertension management				Annex 9
Health education and counseling to be healthy behavior a. Advise to patients and family b. Advice specific for diabetes c. Educate your patient to 1. Take regular physical exercise 2. Eat a heart healthy diet 3. Stop tobacco and harmful use of alcohol d. Counseling on cessation of tobacco use-5 steps (5A)	60 mins	Demonstration Individual practice	1. TOT Manual for MO 2. BHS Manual	PEN protocol 2 Annex 10 Annex 11 Annex 12
Adherence to treatment Medicines used in diabetes and hypertension Medicines use in asthma and COPD	60 mins	Lecture and Discussion	TOT Manual for MO	PEN Protocol 2 Annex 13 Annex 22 Annex 23
Management of asthma and exacerbation of asthma Management of COPD and exacerbation of COPD	60 mins	Lecture and Discussion	TOT Manual for MO	PEN Protocol 3 Annex 14

Day 2

Topic	Time - frame	Method	Materials	Facilitator's note
<ul style="list-style-type: none"> Assessment and referral of women with suspected breast cancer at primary health care Assessment and referral of women with suspected cervical cancer at primary health care Facts about oral cancer 	60 mins	Lecture and Discussion	TOT manual for MO	PEN Protocol 4 Annex 15.1 Annex 15.2 Annex 15.3
Measurement of height and weight	30 min	Demonstration and Group work		Annex 34
Use of Digital BP and Glucometer	30 mins	Demonstration and Group work	TOT Manual for MO	Annex 25, Annex 26
Use of patient's record and register	30 mins	Demonstration and Group work	TOT Manual for MO	Annex 16, 18 and 19
Use of referral form	15mins	Demonstration and Group work	TOT Manual for MO	Annex 17
Monitoring and evaluation	30 mins	Discussion	TOT Manual for MO	Annex 21
Uses of PEN TOT Manual	30 mins	Discussion	TOT Manual for MO	Annex 32
Supervision Checklist	30 mins	Group work	TOT Manual for MO	Annex 22
Discussion time	30 mins	Discussion		
Competency test for PEN	15 mins		TOT Manual for MO	Annex 6

Note : Different types of training methods such as brain-storming, focus group discussion, powerpoint presentation, role play, Individual practice, group work can be used.

Annex (6) Pre-test and post-test questionnaires for TOT training (TMO / TPHO / MO/ THA / THN trainees)

A. Please tick your chosen response

1.	Four major Non-communicable Diseases are: 1. Diabetes 2. Cardiovascular Diseases 3. Chronic Respiratory Diseases and 4. Cancer	True / False
2.	Diabetes is the most frequent cause of NCD deaths among the major NCDs.	True / False
3.	In Myanmar, the current burden of NCDs is greater than those for infectious diseases plus maternal / neonatal / nutrition conditions.	True / False
4.	Four main behavioral risk factors of major NCDs are tobacco use, physical inactivity, harmful use of alcohol and unhealthy diet.	True / False
5.	Almost 6 million people die from tobacco use each year, both from direct tobacco use and second-hand smoke.	True / False
6.	Raised blood pressure is a major cause of deaths in the world and major risk factor for cardiovascular diseases.	True / False
7.	The WHO PEN for primary care in low-resource settings is an innovative and action-oriented response to NCDs challenges.	True / False
8.	The tools of the WHO Package of Essential Non-communicable Diseases Interventions (WHO PEN) support implementation of very cost effective interventions through a specialized approach.	True / False
9.	Advocacy is an important step to influence people, primarily decision-makers, to create change.	True / False
10.	The most common site of cancer in women of Myanmar is cervical cancer.	True / False

B. Fill in the blanks with suitable words.

11. In 2014, estimated percentage of death by NCDs is _____ percent and probability of dying between ages 30 and 70 years caused by four main NCDs is _____ percent.
12. The commonest risk factors that cause NCDs in Myanmar are _____.
13. About _____ % of heart diseases and stroke, _____ % of type II diabetes and over _____ % of cancers can be prevented or delayed by eliminating the common risk factors for NCDs.
14. Selection of persons to be treated at age for diabetes and hypertension is _____ years.
15. There are _____ types of WHO / ISH risk prediction charts used in Myanmar.

16. Urgent referral of hypertension case is at blood pressure more than systolic _____ mmHg and diastolic _____ mmHg.
17. If a person with $BP \geq 140 / 90$ mmHg after life style modification one month, drug of choice is _____.
18. We would like to use _____ approach in counseling for cessation of tobacco.
19. In salt restriction, intake of salt should be less than _____ gram or _____ table spoon per day.
20. Give _____ for type 2 DM if not controlled by diet only ($FBS > 7$ mmol / l) and if there is no renal insufficiency, liver disease or hypoxia.
21. Differentiating Bronchial Asthma and Chronic Obstructive Pulmonary Disease is by using salbutamol and _____.
22. Assessment of Breast cancer at Primary Health Care, demarcation age is _____ years.
23. Persistent and unexplained signs and symptoms of Carcinoma of Cervix are (a) Abnormal vaginal bleeding (i.e. after coitus, between menstrual periods, post menopause) (b) Foul-smelling discharge (c) _____.
24. Monitoring and evaluation purpose of PEN intervention, there are _____ visits required.
25. If cholesterol assay cannot be done, use the mean cholesterol level of _____ to calculate the cardiovascular risk.

Annex (7) Pre-test and post-test questionnaires for BHS trainees

Please tick your chosen response

1. Four major Non-communicable Diseases are: 1. Diabetes 2. Hypertension 3. Chronic Obstructive Pulmonary Diseases and 4. Cancer	True / False
2. Diabetes is the most frequent cause of NCD deaths among the major NCDs.	True / False
3. In Myanmar, the current burden of NCDs is greater than for infectious diseases plus maternal/neonatal/nutrition conditions.	True / False
4. Four main behavioral risk factors of major NCDs are tobacco use, physical inactivity, harmful use of alcohol and unhealthy diet.	True / False
5. Take regular exercise at least 30 minutes per day on 5 days of the week to control body weight and avoid overweight.	True / False
6. As healthy diet, eat fish at least 3 times per week, preferably not oily fish.	True / False
7. Reducing salt intake up to 1.5 tablespoons per day is a good practice to eat healthy diet.	True / False

8. Fasting blood sugar ≥ 7 mmol/l (126 mg/dl) or random blood sugar ≥ 11.1 mmol / l (200 mg / dl) is suggestive to Diabetes Mellitus. True / False

9. The most common site of cancer in women of Myanmar is cervix. True / False

10. WHO/ISH Risk prediction chart can be used without assessment of cholesterol. True / False

11. The commonest risk factor that causes NCDs in Myanmar is hypertension. True / False

12. The WHO PEN for primary care in low-resource settings is an innovative and action-oriented response to NCDs challenges. True / False

13. Selection of persons to be treated at age for diabetes and hypertension is > 40 years. True / False

14. There are two types of WHO/ISH risk prediction charts used in Myanmar. True / False

15. Patient with blood pressure more than 200/100 mm Hg must be necessary to refer urgently. True / False

16. Patients with total cholesterol > 8 mmol/l must be referred. True / False

17. Diabetes patients with severe infection and /or foot ulcer must not be referred. True / False

18. Patient with BP $< 140 / 90$ mmHg should not be considered to give drug. True / False

19. Give Metformin for type 2 DM if not controlled by diet only (FBS > 7 mmol / l) and if there is no renal insufficiency, liver disease or hypoxia. True / False

20. For monitoring and evaluation purposes of PEN intervention, at least 4 visits required within a year. True / False

21. Patient must not take medicines regularly as advised when there are no symptoms. True / False

22. Gliclazide (Sulfonylureas) should be given to pregnant women with diabetes type 2. True / False

23. Amlodipine must be used in Hypertensive patient. True / False

24. We would like to use counseling approach 5 (A) for NCDs Risk factors. True / False

25. Salbutamol inhaler must be used in bronchial asthma patient. True / False

**၆နာက်ဆက်တွဲ (၇) အခြေခံကျန်းမာရေးဝန်ထမ်းများအတွက် ဆန်းခိုးမေးခွန်းလွှာ
မိမိရွွေးချယ်သော မှန် / မှားကို (✓) ခြုံပါ။**

၁။ ကူးစက်မဟုတ်သောရောဂါများထဲမှ အဓိကရောဂါလေးမျိုးမှာ- (၁) ဆီးချိုးမှန် / မှား
သွေးချိုးရောဂါ (၂) သွေးတိုးရောဂါ (၃) နာတာရှည်အဆုတ်ပွဲလျှော့ကျဉ်း
ရောဂါ (၄) ကင်ဆာရောဂါ တို့ဖြစ်ပါသည်။

၂။ ဆီးချိုးသွေးချိုးရောဂါသည် အများဆုံးနှင့် မကြာခကာသေဆုံးမှုကို ဖြစ်စေသော
ကူးစက်ရောဂါ ဖြစ်ပါသည်။ မှန် / မှား

၃။ မြန်မာနိုင်ငံတွင် ကူးစက်မဟုတ်သောရောဂါ၏ လက်ရှိဝန်ထုပ်ဝန်ပိုးမှာ
ကူးစက်ရောဂါ၊ မိခင်၊ ကလေးရောဂါနှင့် အာဟာရပြသနာကြောင့်
ဖြစ်ပွားသော ဝန်ထုပ်ဝန်ပိုးထက် များ၏။ မှန် / မှား

၄။ အဓိကကူးစက်မဟုတ်သောရောဂါဖြစ်စေသော လူတို့၏ အရေးပါသော
အပြုအမူ(၄)ရပ်မှာ- ဆေးလိပ်ဆေးရွက်ကြီး သုံးစွဲခြင်း၊ ကိုယ်လက်လှပ်ရှားမှု
နည်းခြင်း၊ အန္တရာယ်ရှိအောင် အရက်သောက်ခြင်းနှင့် ကျန်းမာရေးနှင့်မညီ
သည့်အထားအစာ စားသုံးခြင်း ဖြစ်ပါသည်။ မှန် / မှား

၅။ ကိုယ်အလေးချိန်ထိန်းရန်နှင့် အဝလွန်ခြင်းမဖြစ်ရန် ပုံမှန်လေ့ကျင့်ခန်းကို
(၁)ရက်လှုပ် မိနစ် (၃၀)၊ တစ်ပတ်လှုပ် (၅)ရက် လုပ်ဆောင်ရန်လိုပါသည်။ မှန် / မှား

၆။ ကျန်းမာရေးနှင့် ညီညွတ်ရန် တစ်ပတ်လှုပ် အနည်းဆုံး ငါးကို (၃)ကြိမ်
စားသင့်ပါသည်။ အဆီမပါသောင်းဖြစ်ရန် လိုပါသည်။ မှန် / မှား

၇။ တစ်နေ့လှုပ် ဆားကို စားပွဲစွန်း ၁-စွန်းခွဲမျှ စားသုံးခြင်းသည် ကျန်းမာရေး
နှင့် ညီပါသည်။ မှန် / မှား

၈။ အစာမစားမီ သွေးတွင်းသကြားခါတ် $\geq 7 \text{ mmol/l (126 mg/dl)}$ (သို့မဟုတ်)
ကြိုက်သည့်အချိန်စစ် သွေးထဲရှိသကြားခါတ် $\geq 11.1 \text{ mmol/l (200 mg/dl)}$
ရှိပါက ဆီးချိုးသွေးချိုးဟု သတ်မှတ်ပါသည်။ မှန် / မှား

၉။ မြန်မာအမျိုးသမီးများတွင် ကင်ဆာအများဆုံးဖြစ်နိုင်သောနေရာမှာ
သားအိမ်ခေါင်း ဖြစ်ပါသည်။ မှန် / မှား

၁၀။ နှုလုံးသွေးကြောရောဂါဖြစ်နိုင်ခြေ ခန့်မှန်းကုဒ်ပြားတွင် ကိုလက်စထရော
မပါဘဲ အသုံးပြု၍ ရပါသည်။ မှန် / မှား

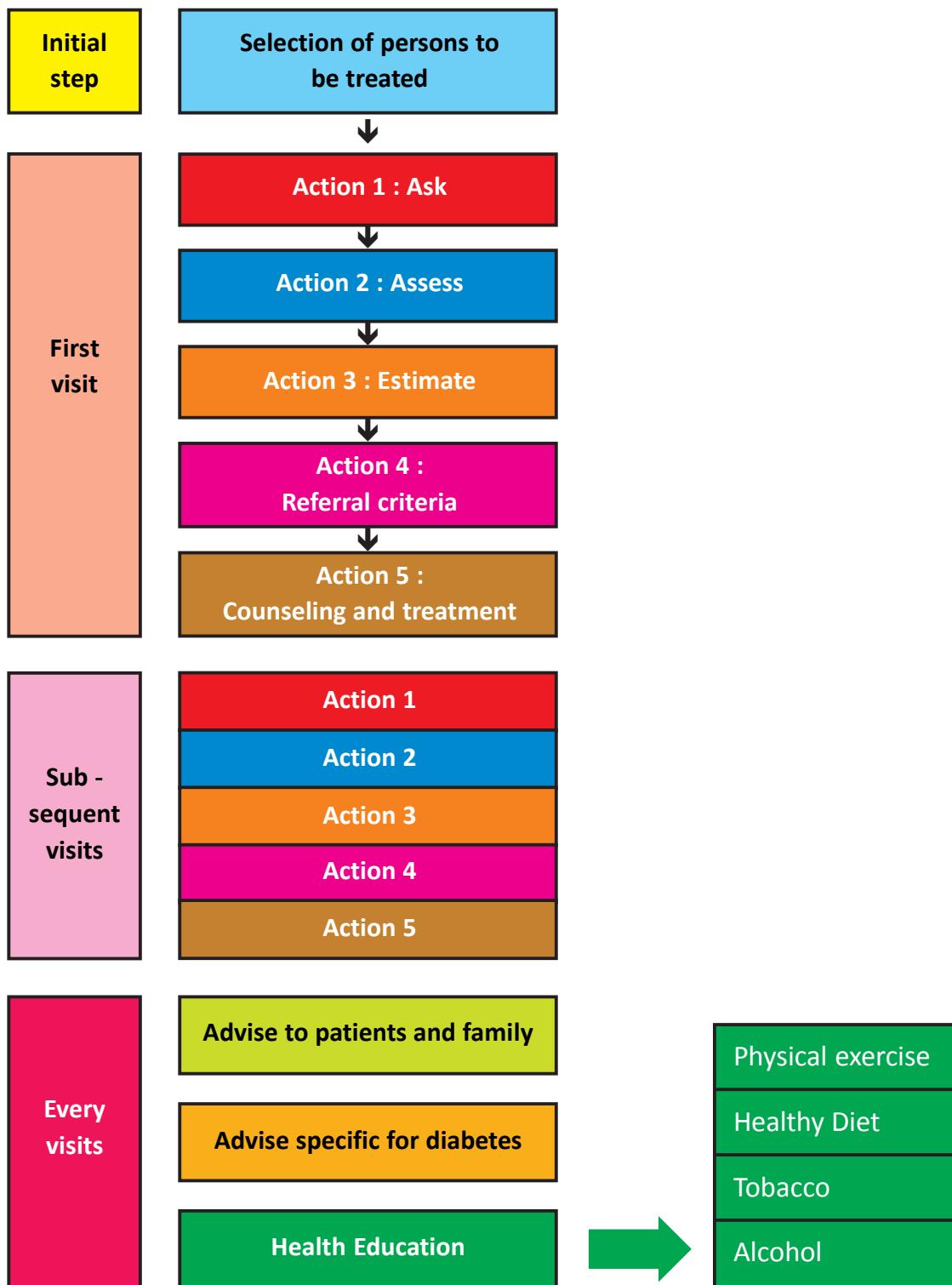
၁၁။	မြန်မာပြည်တွင် ကူးစက်မဟုတ်သော ရောဂါများ ဖြစ်စေသည့် အဓိက အန္တရာယ်မှာ သွေးတိုးရောဂါဖြစ်ပါသည်။	မှန်/မှား
၁၂။	WHO PEN လုပ်ငန်းသည် ကူးစက်မဟုတ်သောရောဂါ၏ စိန်ခေါ်မှုကို တုန်ပြန်ချက်အဖြစ် တိတွင်လုပ်ဆောင်ခြင်း ဖြစ်ပါသည်။	မှန်/မှား
၁၃။	ဆီးချိုသွေးချိုနှင့် သွေးတိုးရောဂါကုသရန်အတွက် အသက် (၄၀)နှင့် အထက် လူများကို ရွေးချယ်ရန် လိုပါသည်။	မှန်/မှား
၁၄။	မြန်မာပြည်တွင် နှုလုံးသွေးကြောရောဂါဖြစ်နိုင်ခြေ ခန့်မှန်းကောင်ပြား (၂)မျိုး အသုံးပြုသည်။	မှန်/မှား
၁၅။	သွေးဖိအား 200/100 mmHg ရှိပါက လူနာကိုချက်ချင်းထွန်းပို့ပေးရမည်။	မှန်/မှား
၁၆။	ကိုလက်စထရောအဆီပါတ် total cholesterol > 8mmol/l ရှိပါက လူနာကို ထွန်းပို့ပေးရန် လိုပါသည်။	မှန်/မှား
၁၇။	ဆီးချိုသွေးချိုရောဂါလူနာတွင် ပြင်းထန်သော ပိုးဝင်ခြင်း၊ ခြေထောက်တွင် အနာဝင်ခြင်း ဖြစ်ပါက ထွန်းပို့ပေးရန် မလိုပါ။	မှန်/မှား
၁၈။	သွေးဖိအား 140 / 90 mmHg ထက် နည်းသောလူနာကို သွေးကျဆေးပေးရန် မလိုပါ။	မှန်/မှား
၁၉။	Type 2 ဆီးချိုသွေးချိုရောဂါကို အစားအစာ ထိန်းချုပ်စားသုံးခြင်းဖြင့် မတိန်းနိုင်ပါက Metformin ဆေးပေးနိုင်ပါသည်။ (သို့ရာတွင် လူနာသည် (FBS > 7mmol/l) ရှိပြီး ကျောက်ကပ်ပျက်ခြင်း၊ အသဲရောဂါနှင့် အသက် ရှုံးမဝေခြင်း မရှိစေရပါ။	မှန်/မှား
၂၀။	PEN လုပ်ဆောင်ချက်တွင် တစ်နှစ်အတွင်း လူနာသည် (၄)ကြိမ် ပြသရန် လိုပါသည်။	မှန်/မှား
၂၁။	ရောဂါလက္ခဏာမပြပါက ဆေးကိုမှန်မှန်သောက်ရန် မလိုပါဟု အကြံပြုပါ။	မှန်/မှား
၂၂။	Gliclazide (Sulfonylureas) ဆေးကို Type 2 ဆီးချိုသွေးချိုဖြစ်နေသော ကိုယ်ဝန်ဆောင်မိခင်အား ပေး၍ရပါသည်။	မှန်/မှား
၂၃။	Amlodipine ဆေးကို သွေးတိုးလူနာအား ပေး၍ရပါသည်။	မှန်/မှား
၂၄။	ကူးစက်မဟုတ်သောရောဂါ ဖြစ်စေသည့်အန္တရာယ် မဖြစ်စေရန် နှစ်သိမ့် ဆွေးနွေး အကြံပြုရာတွင် 5A approach သုံးနိုင်သည်။	မှန်/မှား
၂၅။	Salbutamol Inhaler ဆေးကို ပန်းနာရင်ကြပ်ရောဂါ၌ သုံးစွဲရမည်။	မှန်/မှား

အခြေခံကျို့မာရေးဝန်ထမ်းများအတွက် ဆန်းခိုင်မေးခွန်းလွှာ၏ အခြေများ

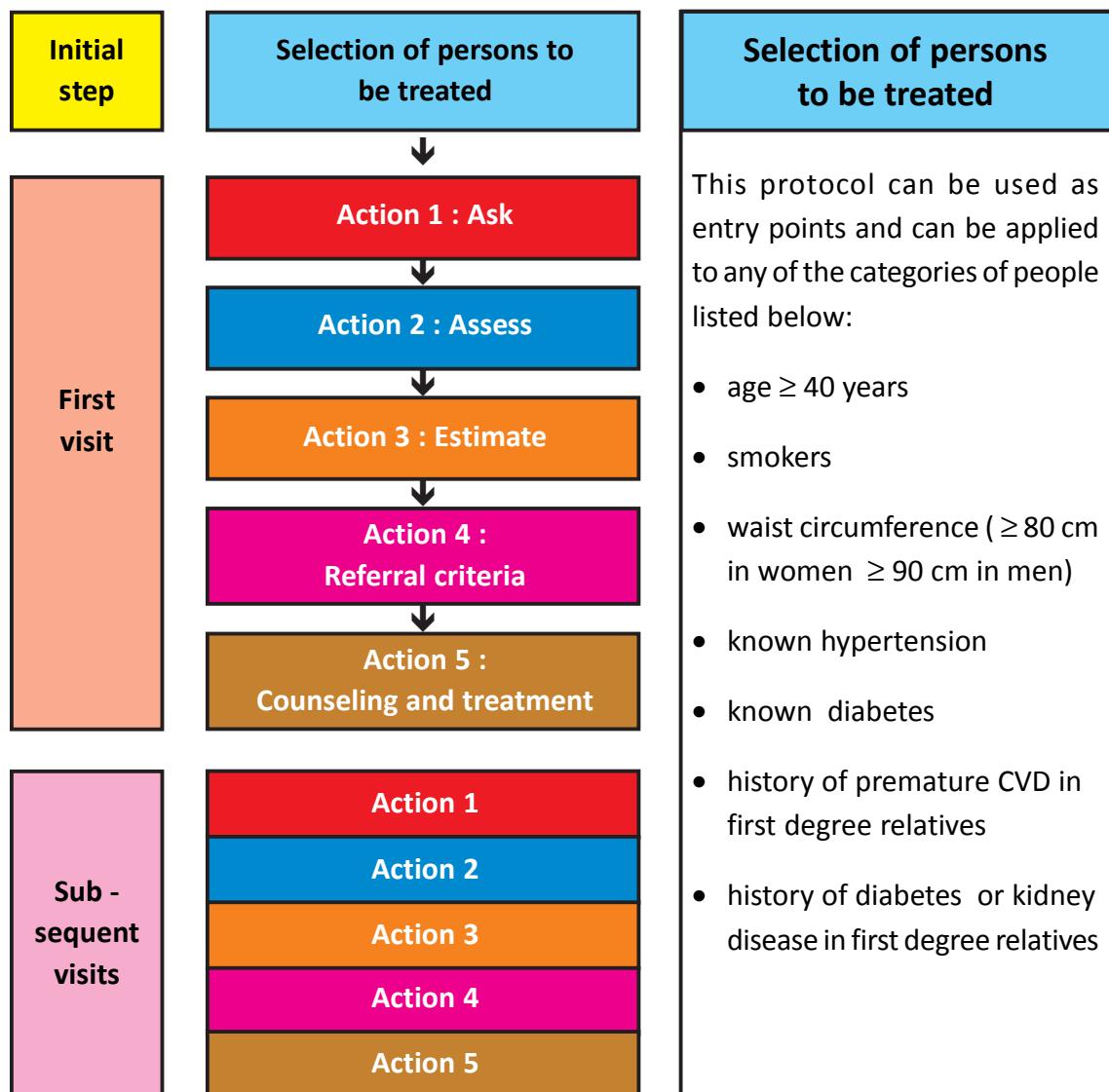
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Annex (8) Implementation of PEN protocol (1 and 2) for integrated management of diabetes and hypertension

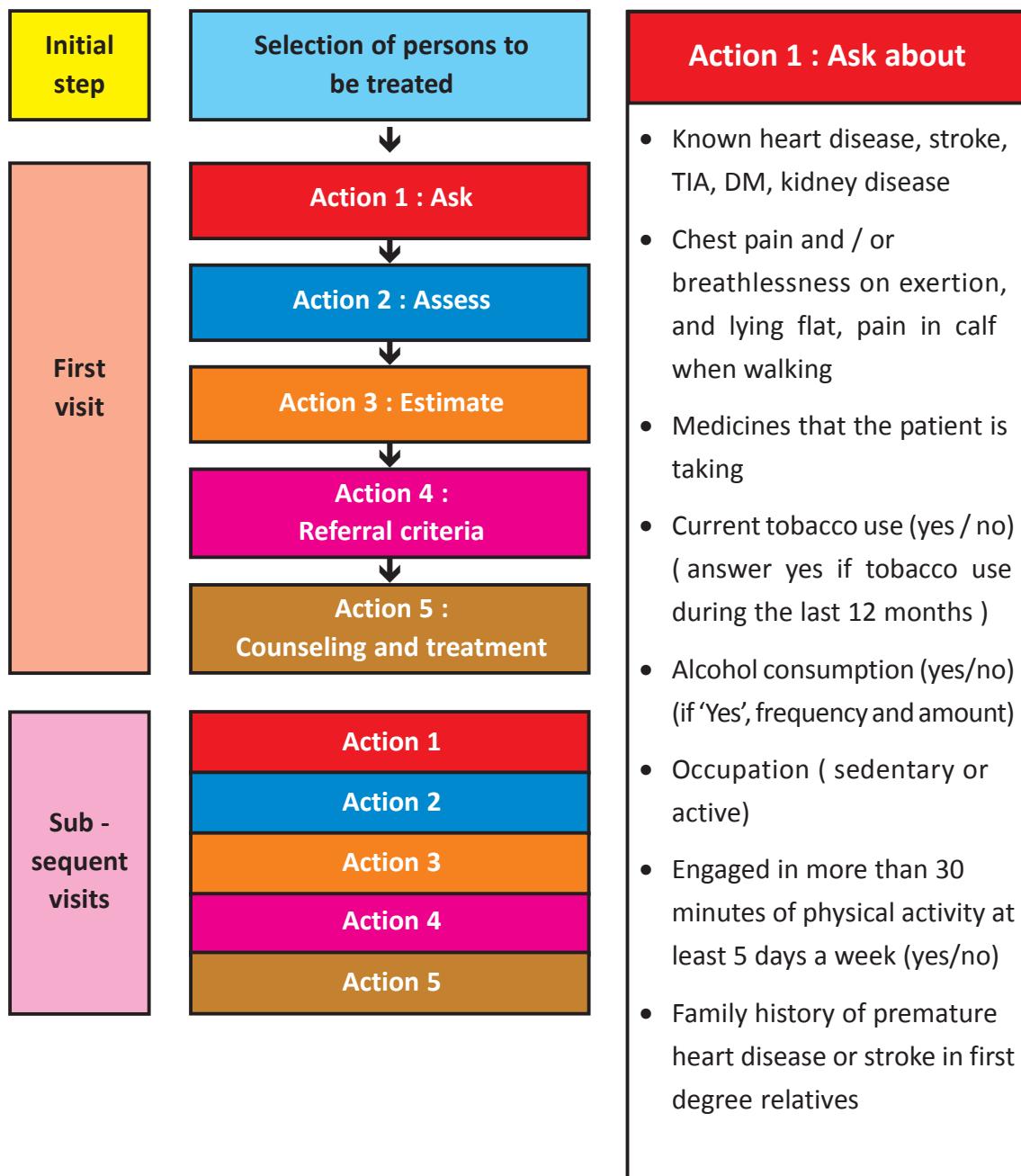
Protocol for Integrated Management



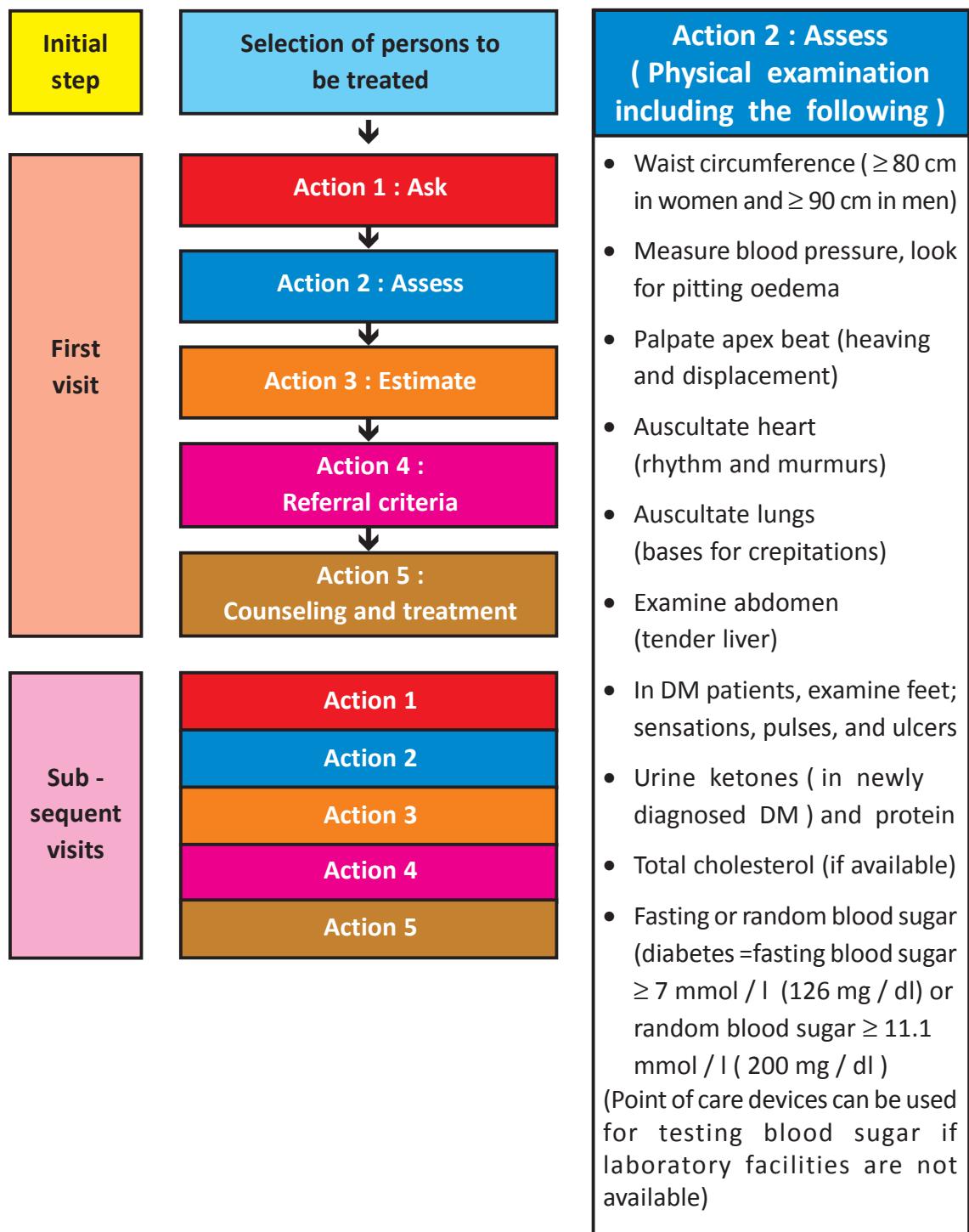
Selection of persons to be treated



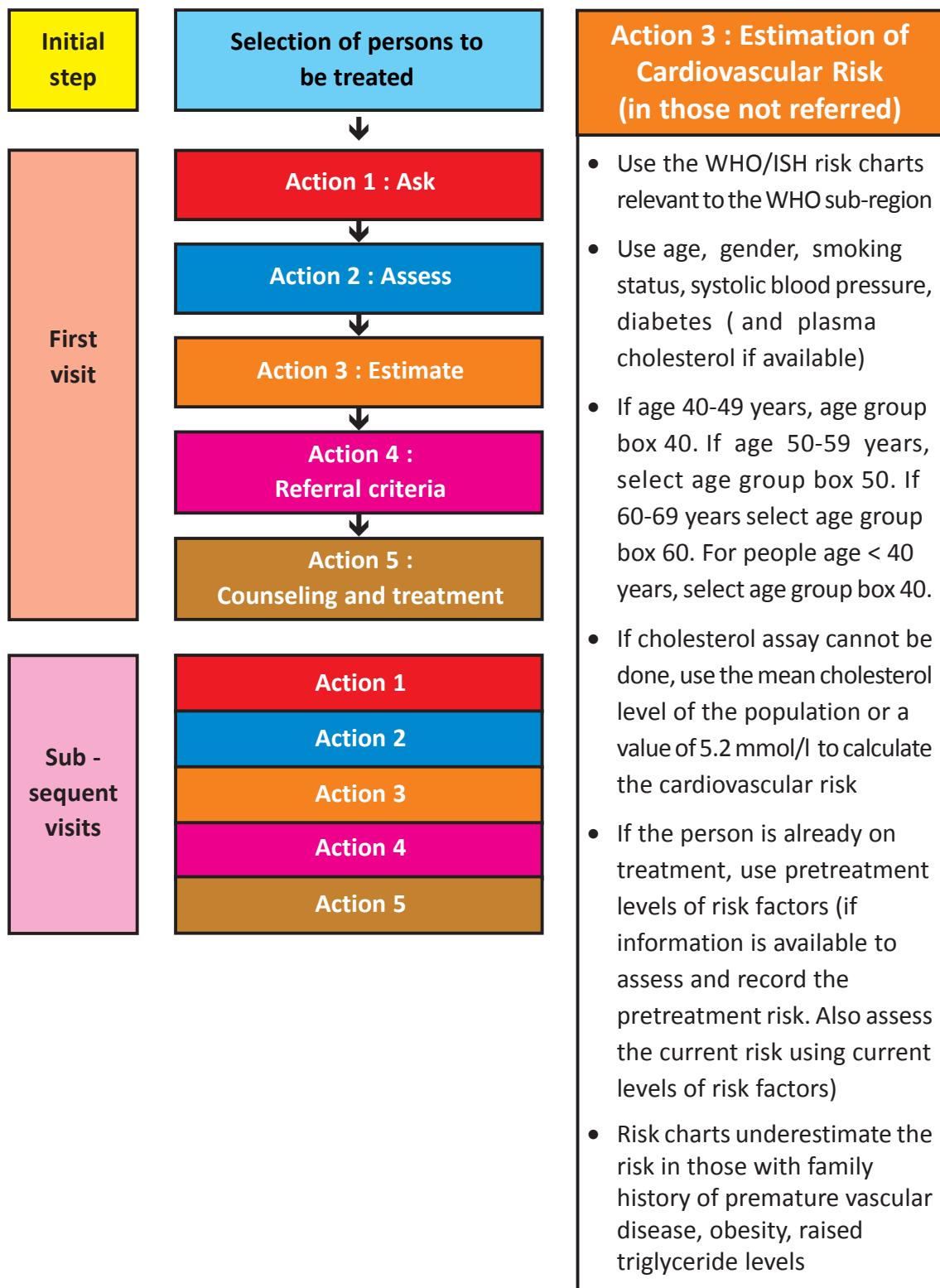
Action 1 : Ask about



Action 2 : Assess (Physical examination including the following)



Action 3 : Estimation of Cardiovascular Risk (in those not referred)



Instructions for using WHO / ISH risk prediction charts

There are two sets of charts. One set can be used in settings where blood cholesterol can be measured. The other set is for settings in which blood cholesterol cannot be measured.

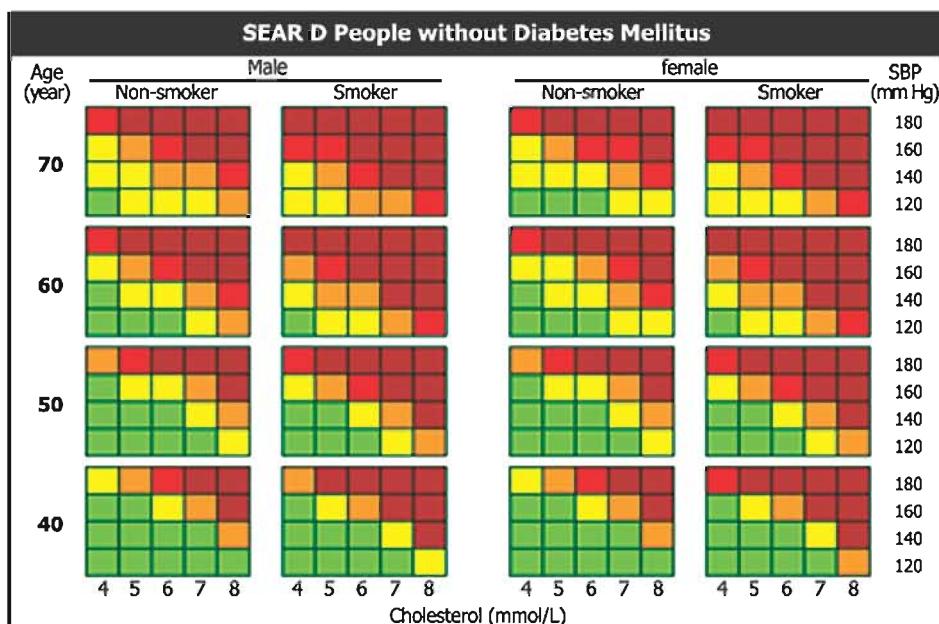
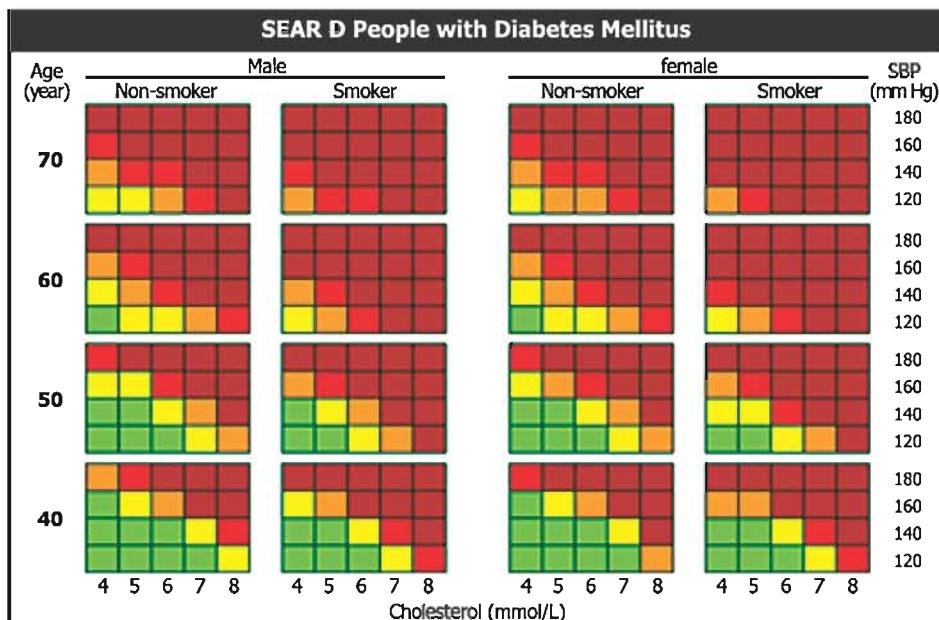
Method of using WHO/ISH risk prediction charts to assess cardiovascular risk

1. First make sure that you select the appropriate charts using information provided.
(If blood cholesterol cannot be measured due to resource limitations, the mean cholesterol value for the population can be used).
2. Before applying the chart to estimate the 10 year cardiovascular risk of an individual, the following information is necessary:
 - Presence or absence of diabetes
 - Gender
 - Smoker or non-smoker
 - Age
 - Systolic blood pressure (SBP)
 - Total blood cholesterol (if in mg/dl divide by 38 to convert to mmol/l)
3. Estimate cardiovascular risk by using WHO/ISH risk prediction chart

WHO / ISH Risk prediction chart with cholesterol

WHO / ISH risk prediction chart for SEAR D. 10 - years risk of a fatal or non - fatal cardiovascular event by gender, age, systolic blood pressure, total blood cholesterol, smoking status and presence or absence of diabetes mellitus.

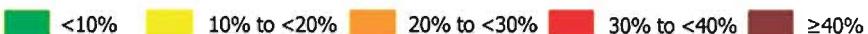
Risk Level <10% 10% to <20% 20% to <30% 30% to <40% ≥40%

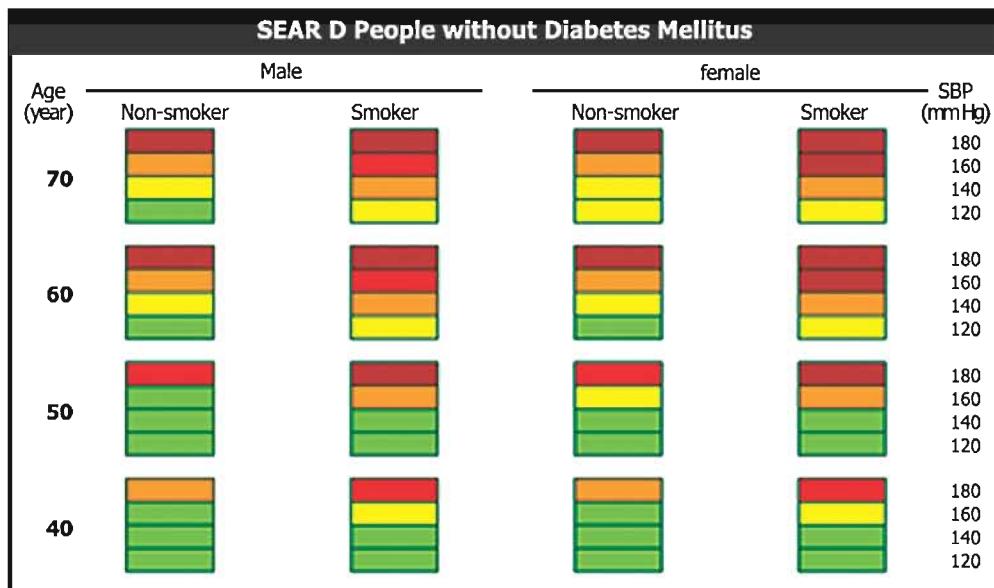
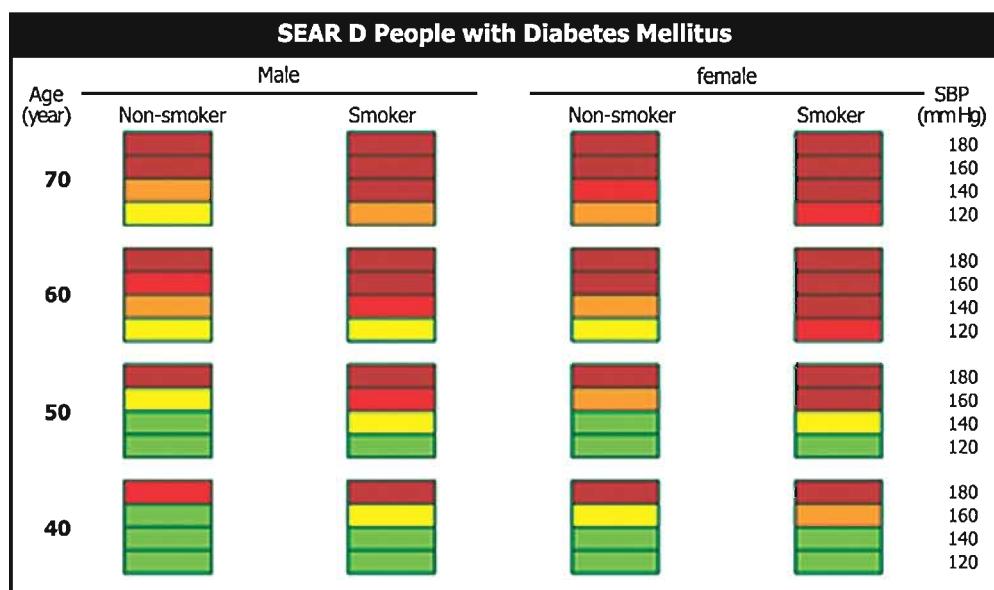


This chart can only be used for countries of the WHO Region of South - East Asia, sub-region D, in settings where blood cholesterol can be measured (Bangladesh, Bhutan, Republic of Korea, India, Maldives, Myanmar, Nepal).

WHO / ISH Risk prediction chart without cholesterol

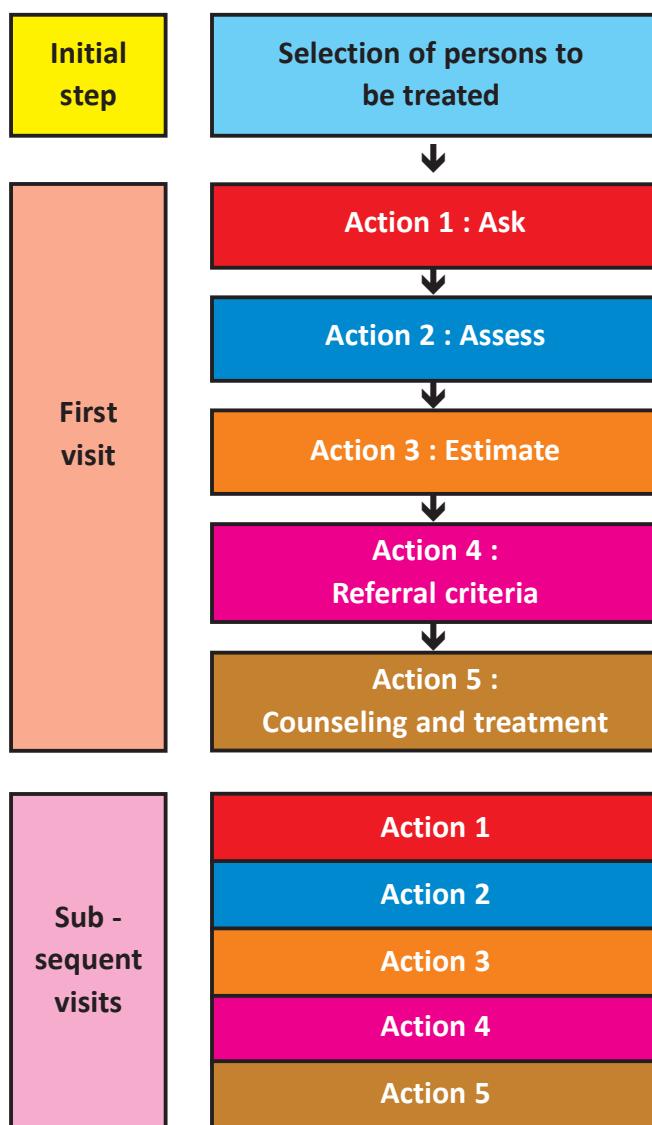
WHO / ISH risk prediction chart for SEAR D. 10 - years risk of a fatal or non - fatal cardiovascular event by gender, age, systolic blood pressure, smoking status and presence or absence of diabetes mellitus.

Risk Level  <10%  10% to <20%  20% to <30%  30% to <40%  >=40%



This chart can only be used for countries of the WHO Region of South - East Asia, sub-region D, in settings where blood cholesterol CANNOT be measured (Bangladesh, Bhutan, Republic of Korea, India, Maldives, Myanmar, Nepal).

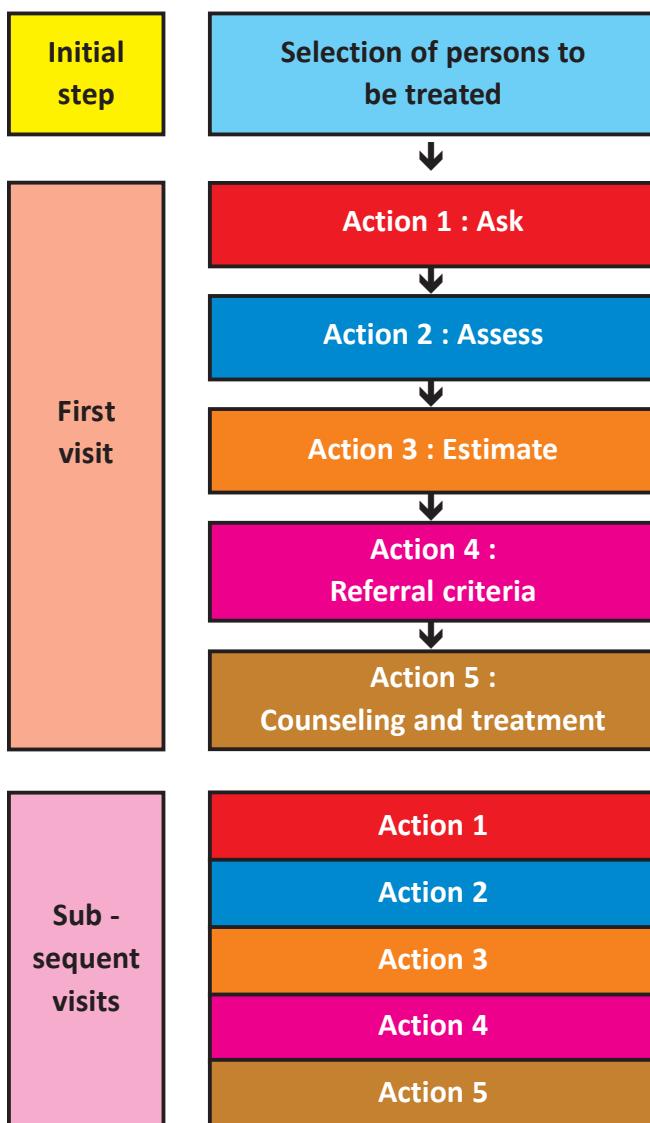
Action 4 : Referral criteria for all visit



Action 4 : Referral criteria for all visit

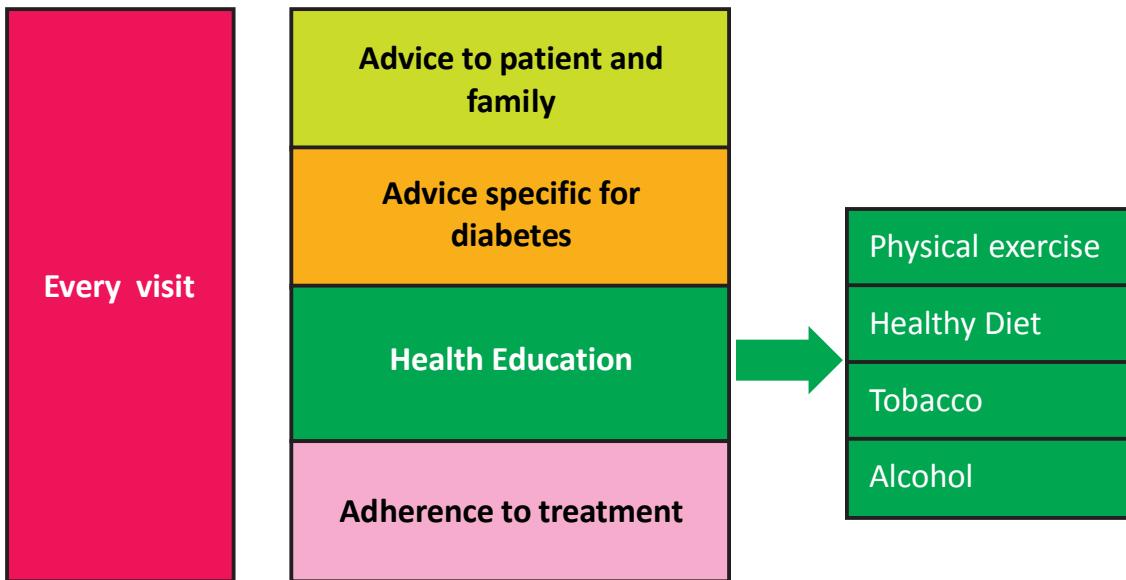
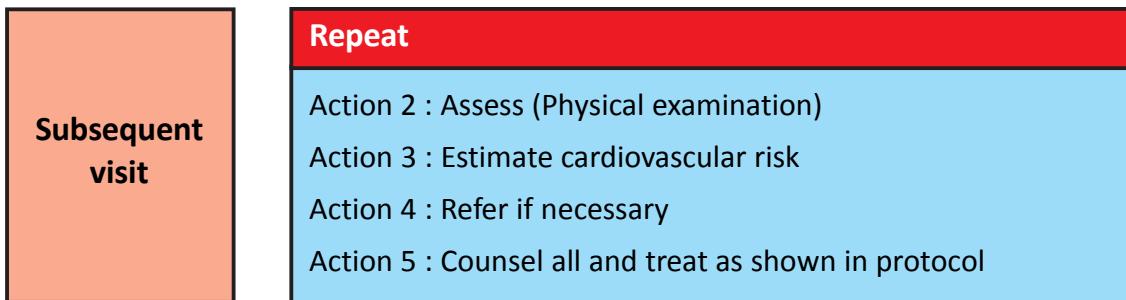
- Any proteinuria
- Newly diagnosed DM with urine ketones 2+ or in lean persons of < 30 years
- Total cholesterol > 8mmol / L
- DM with blood glucose > 14 mmol / L despite maximal metformin with or without Sulphonylurea
- DM with severe infection and / or foot ulcers
- DM with recent deterioration of vision or no eye exam in 2 years
- High cardiovascular risk ($\geq 30\%$ the exact level)
- BP > 200 / > 120 mm Hg (urgent referral)
- BP ≥ 140 or ≥ 90 mmHg in people < 40 years (to exclude secondary hypertension)
- Known heart disease, stroke, transient ischemic attack, DM, kidney disease (for assessment, if this has not been done)
- New chest pain or change in severity of angina or symptoms of transient ischemic attack or stroke
- Target organ damage (e.g. angina, claudication, having apex, cardiac failure)
- Cardiac murmurs
- Raised BP $\geq 140 / 90$ (in DM above 130 / 80mmHg) while on treatment with 2 or 3 agents

Action 5 : Counsel all patients and treat as shown below



Action 5: Counsel all patients and treat as shown below

First visit	Consider drug treatment for the following categories	<ul style="list-style-type: none"> ■ All patients with established DM and cardiovascular disease (coronary heart disease, myocardial infarction, transient ischaemic attacks, cerebro-vascular disease or peripheral vascular disease), renal disease. If stable, should continue the treatment already prescribed and be considered as with risk > 30% ■ People with albuminuria, retinopathy, left ventricular hypertrophy ■ All individuals with persistent raised BP $\geq 160/100$ mmHg; antihypertensive treatment ■ All individuals with total cholesterol at or above 8 mmol/l (320 mg/dl); lifestyle advice and statins 	Additional actions for individuals with DM: <ul style="list-style-type: none"> ■ Give an antihypertensive for those with BP $\geq 130 / 80$ mmHg ■ Give a statin to all with type 2 DM aged ≥ 40 years ■ Give Metformin for type 2 DM if not controlled by diet only (FBS > 7 mmol/l), and if there is no renal insufficiency, liver disease or hypoxia. ■ Titrate metformin dose to Target glucose value ■ Give a sulfonylurea to patients who have contraindications to metformin or if metformin does not improve glycaemic control. ■ Give advice on foot hygiene, nail cutting, treatment of calluses, appropriate footwear and assess feet at risk of ulcers using simple methods (inspection, pin-prick sensation) ■ Angiotensin converting enzyme inhibitors and/or Amlodipine are recommended as first-line treatment of hypertension. Beta blockers are not recommended for initial management but can be if thiazides or angiotensin converting enzyme (ACE) inhibitors are contraindicated. ■ Follow up every 3 months
	Risk < 20%	<ul style="list-style-type: none"> ■ Counsel on diet, physical activity, smoking cessation and avoiding harmful use of alcohol ■ If risk < 10% follow up in 12 months ■ If risk 10 - < 20% follow up every 3 months until targets are met, then 6 - 9 months thereafter 	
	Risk 20 to < 30%	<ul style="list-style-type: none"> ■ Counsel on diet, physical activity, smoking cessation and avoiding harmful use of alcohol ■ Persistent BP $\geq 140 / 90$ mm Hg consider drugs (see below ** Antihypertensive medications) ■ Follow-up every 3 - 6 months 	
	Risk $\geq 30\%$	<ul style="list-style-type: none"> ■ Counsel on diet, physical activity, smoking cessation and avoiding harmful use of alcohol ■ Persistent BP $\geq 130 / 80$ consider drugs (see below ** Antihypertensive medications) ■ Give a statin ■ Follow-up every 3 months, if there is no reduction in cardiovascular risk after six months of follow up refer to next level 	



Annex (9) Detailed guidelines for additional actions for individuals with diabetes and hypertension

Diagnosis of Diabetes mellitus

FBG ≥ 126 mg / dL (7.0 mmol / L). Fasting is defined as no caloric intake for at least 8 h.*
OR
2 - h PG ≥ 200 mg / dL (11.1 mmol / L) *
OR
A1C $\geq 6.5\%$ (48 mmol/mol) *
OR
In a patient with classic symptoms of polyuria or polydipsia or weight loss or hyperglycemia or hyperglycemic crisis, a random plasma glucose ≥ 200 mg / dL (11.1 mmol / L).

In a patient with classic symptoms of hyperglycemia or hyperglycemic crisis, a random plasma glucose ≥ 200 mg/dL (11.1 mmol / L).

* In the absence of unequivocal hyperglycemia, results should be confirmed by repeat testing.

In type 2 Diabetes Mellitus, patient should check blood glucose level every 3 day or 5 day or 7 day depending on glycemic control. If the patient is not controlled, patient should check daily.

TREATMENT

Note: OD (Once a day) BD (Twice a Day)

Monotherapy if RBS < 250 mg %

Start Metformin 500 mg, BD

Wait for 1 week to get “Target”

Target blood sugar

- Preprandial capillary plasma glucose - 80 - 130 mg %
- Peak postprandial capillary plasma glucose - < 180 mg %
- HbA1C (3 monthly) - < 7%

If not reach “Target”

Increase up to —

- Three times per day (1500 mg / day)
- Maximum dose 3000 mg / day
- Maintenance 2000 mg / day

If metformin cannot tolerate or contraindicated ---- start with Gliclazide 80 mg OD or BD

---- Maximum 2 BD (320 mg)

Combination therapy if RBS 250 - 350 mg %

Metformin 500 mg	1 ----- 1	}	Depend on blood sugar level
Gliclazide 80 mg	1 ----- 1		

If not reach "Target" after 1 week, can increase up to

- Maximum — Metformin 500 mg 2 --- 2 --- 2
— Gliclazide 80 mg 2 ----- 2

Treatment Algorithm

Metformin or Gliclazide

Not well controlled

Metformin + Gliclazide

Not well controlled

Metformin + Gliclazide + Pioglitazone

Or
Metformin + Gliclazide + Sitagliptin

Not well controlled

Oral triple therapy + Basal insulin

Warning about Oral Hypoglycaemic Agent (OHA)

Metformin

Side Effects - Nausea , Vomiting, Diarrhoea

Contraindication - If serum Creatinine > 1.5 mg %, omit metformin

- If serum Creatinine can not be measured, look for presence of oedema/ puffy face that indicates to omit metformin.

Gliclazide

Side Effect - Weight gain , hypoglycemia

Pioglitazone

Side Effect - Oedema (Can exacerbate Congestive heart failure and avoid in symptomatic heart failure patient)

HYPOLYCEMIA

Symptoms

Dizziness, sweating, hunger, convulsion, unconscious

Signs

RBS < 70 mg/dl

Treatment

Oral glucose fluid or IV 50% glucose (2) ampules stat

HYPERTENSION

Diagnosis

Blood pressure is more than 140 / 90 mmHg. (5 minutes apart, sitting position)

Treatment

If BP is between 140 / 90 mmHg and 160 / 100 mmHg

Start with mono therapy and life style modification

Amlodipine 5 mg at night time OD and can increase to 10 mg OD

If not controlled, add enalapril 5 mg OD (can increase to 10 mg OD)

If BP > 160 / 100 mmHg

Start with combination therapy

Amlodipine 5 mg OD (morning) + Enalapril 5 mg OD (Evening)

Maximum Dose- Amlodipine 10 mg + Enalapril 10 mg BD

If patient has ischaemic heart disease, use beta blocker

(Atenolol 50 mg - OD or BD)

Target Blood Pressure

If age is < 60 yrs, target of BP is < 140 / 90 mmHg

If age is > 60 yrs, target of BP is < 150 / 90 mmHg

In DM or Hypertension Patient, 10 year Cardiovascular Risk must be calculated.

If 10 year Cardiovascular risk > 30 %, add Aspirin 75 mg OD and Atorvastatin 10 mg OD

RENAL DISEASE

Oedema / puffy face

Urine albumin (++)

Increased serum creatinine

Caution to use **Metformin and Enalapril**

Annex (10) Advice to Patients and Families

Advice to patients and families

- Avoid table salt and reduce salty foods such as pickles, salty fish, fast food, processed food and canned food
- Have your blood glucose level, blood pressure and urine checked regularly

Advice specific for diabetes

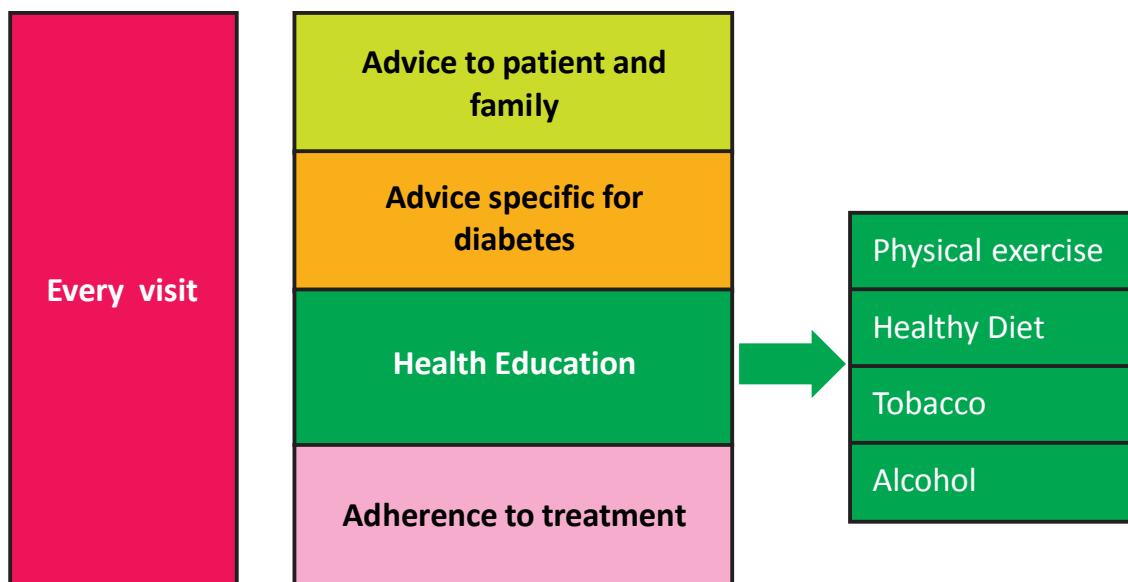
- Advise overweight patients to reduce weight by reducing their food intake
- Advise all patients to give preference to low glycaemic-index foods (e.g. beans, lentils, oats and unsweetened fruit) as the source of carbohydrates in their diet
- If you are on any DM medication that may cause your blood glucose to go down too low carry sugar or sweets with you
- If you have DM, eyes should be screened for eye disease (diabetic retinopathy) by an ophthalmologist at the time of diagnosis and every two years thereafter, or as recommended by the ophthalmologist
- Avoid walking barefoot or without socks
- Wash feet in lukewarm water and dry well especially between the toes
- Do not cut calluses or corns, and do not use chemical agents on them
- Look at your feet every day and if you see a problem or an injury, go to your health worker

Annex (11) Instruction for Health Education and Counseling on Healthy Behaviors (to be applied to ALL)

Protocol 2 consists of health education topics in which there are

- 1) take regular physical exercise
- 2) eat a heart healthy diet
- 3) stop tobacco, counseling of tobacco uses and
- 4) adherence to treatment.

This protocol must be applied in every visit. IEC materials had been mentioned in Annex 29. Essential technologies and tools including drugs / equipment for PEN expansion had been also shown in Annex 24 and 25.



Educate your patient to

- Take regular physical activity
- Eat a “ heart healthy ” diet
- Stop tobacco and avoid harmful use of alcohol
- Attend regular medical follow-up

Take regular physical exercise

- Progressively increase physical activity to moderate levels (such as brisk walking); at least 30 minutes per day on 5 days of the week
- Control the body weight and avoid overweight by reducing high calories food and taking adequate physical activity

Eat a heart healthy diet

- **Salt (sodium chloride)**

Restrict to less than 5 grams (1 teaspoon) per day

Reduce salt when cooking, limit processed and fast foods

- **Fruits and vegetables**

5 servings (400-500 grams) of fruits and vegetable per day

1 serving is equivalent to 1 orange, apple, mango, banana or 3 tablespoons of cooked vegetables

- **Fatty food**

Limit fatty meat, dairy fat and cooking oil (less than two tablespoons per day)

Replace palm and coconut oil with olive, soya, corn, rapeseed or safflower oil

Replace other meat with chicken (without skin)

- **Fish**

Eat fish at least 3 times per week, preferably oily fish such as tuna, mackerel, salmon

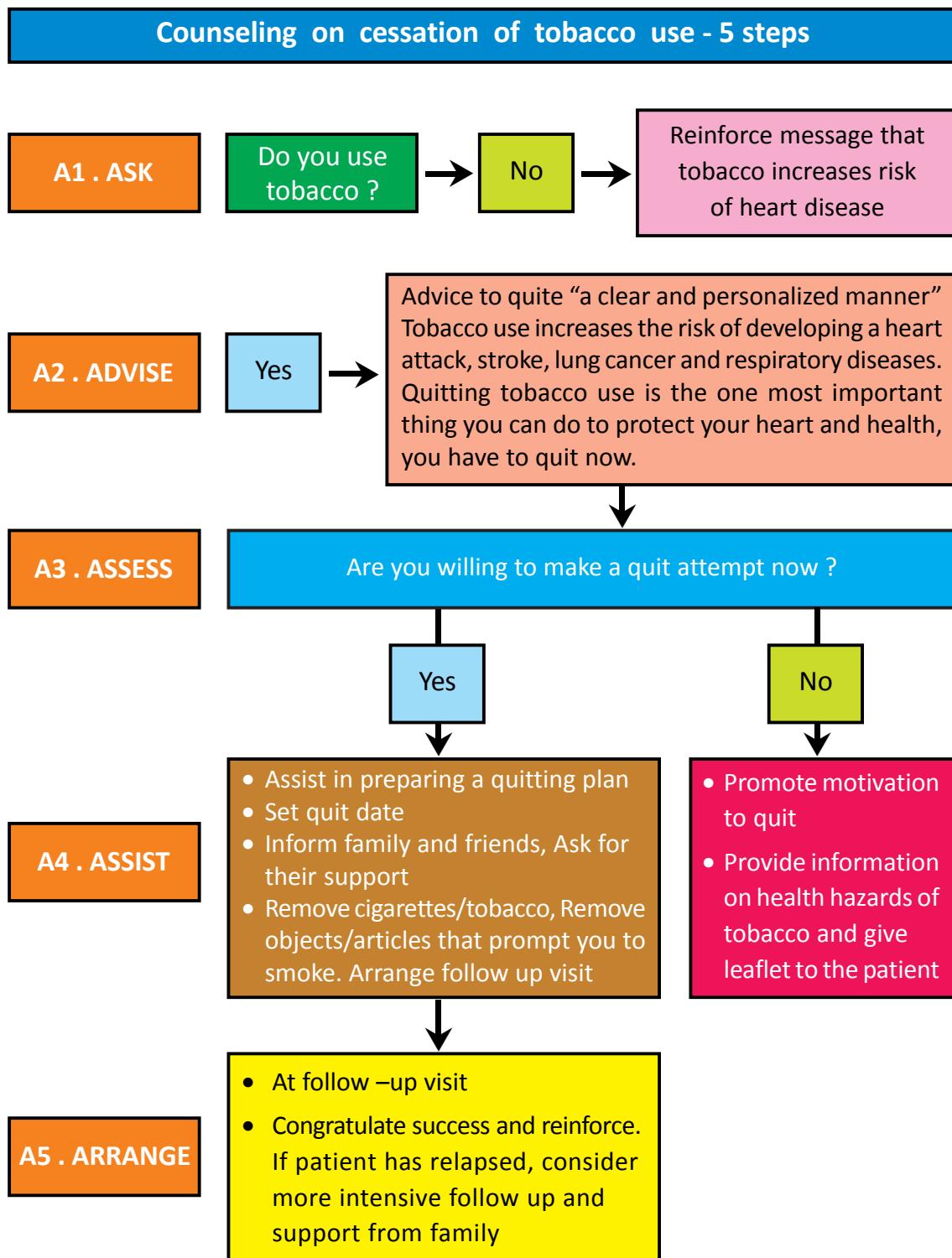
Stop tobacco

- Encourage all non - smokers not to start smoking
- Strongly advise all smokers to stop smoking and support them in their efforts
- Individuals who use other forms of tobacco should be advised to quit

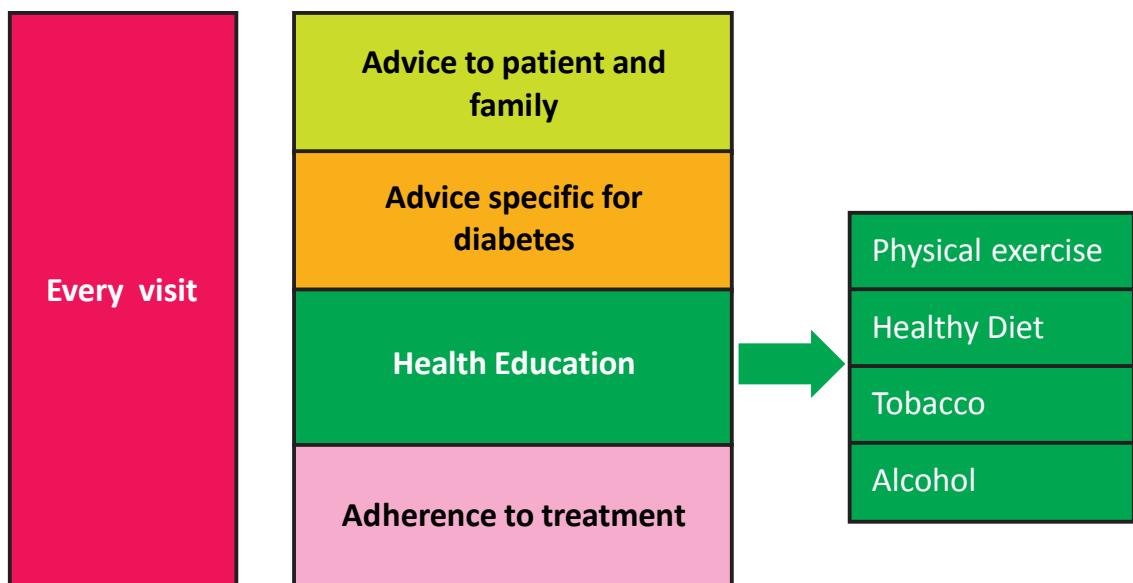
Avoid harmful use of alcohol

- Alcohol abstinence should be reinforced
- People should not be advised to start taking alcohol for health reasons
- Those men who take > 2 drinks per day and women who take >1 drink per day should be advised to reduce. {one unit/drink=half pint of beer/lager (5 % alcohol) 100ml of wine (10 % alcohol), spirits 25 ml (40% alcohol)}
- Advise patients not to use alcohol when additional risks are present, such as driving or operating machinery, pregnant or breast feeding, taking medications that interact with alcohol
- Having medical conditions made worse by alcohol
- Having difficulties in controlling drinking

Annex (12) Counseling on Cessation of Tobacco Use - 5 steps



Annex (13) Adherence to Treatment



Adherence to treatment

- If the patient is prescribed a medicine/s:
 - teach the patient how to take it at home:
 - explain the difference between medicines or long- term control (e.g. blood pressure) and medicines for quick relief (e.g. for wheezing)
 - tell the patient the reason for prescribing the medicine/s
- Show the patient the appropriate dose
- Explain how many times a day to take the medicine
- Label and package the tablets
- Check the patient's understanding before the patient leaves the health centre
- Explain the importance of:
 - keeping an adequate supply of the medications
 - the need to take the medicines regularly as advised even if there are no symptoms

Annex (14) PEN protocol 3

Annex 14.1 Differential of asthma and chronic obstructive pulmonary disease

1. To differentiate between Asthma and Chronic Obstructive Pulmonary Disease
2. Asthma and COPD can both present with cough, difficult breathing, tight chest and/or wheezing
3. Diagnosis

Diagnosis of asthma more likely :	Diagnosis of COPD more likely:
<ul style="list-style-type: none">◆ previous diagnosis of asthma;◆ symptoms since childhood or early adulthood;◆ history of hay fever, eczema and/or allergies;◆ intermittent symptoms with asymptomatic periods in between;◆ symptoms worse at night or early morning;◆ symptoms triggered by respiratory infection, exercise, weather changes or stress;◆ symptoms respond to salbutamol.	<ul style="list-style-type: none">◆ previous diagnosis of COPD;◆ history of heavy smoking, i.e. > 20 cigarettes per day for > 15 years;◆ history of heavy and prolonged exposure to burning fossil fuels in an enclosed space, or◆ high exposure to dust in an occupational setting;◆ symptoms started in middle age or later (usually after age 40);◆ symptoms worsened slowly over a long period of time;◆ long history of daily or frequent cough and sputum production often◆ starting before shortness of breath;◆ symptoms that are persistent with little day to day variation.

4. Test

- ◆ Measure Peak Expiratory Flow rate (PEFR)
- ◆ Give two puffs of salbutamol and re-measure after 15 minutes
- ◆ If the PEFR improves by 20 %, a diagnosis of asthma is very probable
- ◆ Smaller response makes a diagnosis of COPD more likely

Above protocol should be used by Doctors, TMOs, as well as Basic Health Staff

Annex (14.2) Management of Asthma

ASK

Is asthma well controlled or uncontrolled ?

Asthma is considered to be **well controlled** if the patient has:

- ◆ daytime asthma symptoms and uses a beta agonist two or fewer times per week;
- ◆ night time asthma symptoms two or fewer times per month;
- ◆ no or minimal limitation of daily activities;
- ◆ no severe exacerbation (i.e. requiring oral steroids or admission to hospital) within a month;
- ◆ a PEFR, if available, above 80 % predicted.

If any of these markers are exceeded, the patient is considered to have **uncontrolled asthma**.

TREAT

Increase or decrease treatment according to how well asthma is controlled using a stepwise approach (Step 1 to 3 should be applied by doctors as well as basic health staff)

Step 1. Inhaled salbutamol prn

Step 2. Inhaled salbutamol prn plus low-dose inhaled beclometasone, starting with 100 ug twice daily for adults and 100 ug once or twice daily for children

Step 3. Same as step 2, but give higher doses of inhaled beclometasone, 200 ug or 400 ug twice daily

After Step 3, patient should be referred to specialist

Step 4. Add low-dose oral theophylline to Step 3 treatment (assuming long-acting beta agonists and leukotriene antagonists are not available)

Step 5. Add oral prednisolone, but in the lowest dose possible to control symptoms (nearly always less than 10 mg daily)

At each step, check the patient's adherence to treatment and observe their inhaler technique.

REFER

Review asthma control every 3-6 months and more frequently when treatment has been changed or asthma is not well controlled.

Referral for specialist :

- ◆ when asthma remains poorly controlled;
- ◆ when the diagnosis of asthma is uncertain;
- ◆ when regular oral prednisolone is required to maintain control.

Annex (14.3) Management of Exacerbation of Asthma (for Doctors only)

ASSESS	Assess severity	
	<p>Severe</p> <ul style="list-style-type: none">◆ PEFR 33-50% best or predicted. (% of previous assessment result in normal condition)◆ Respiratory rate more than 25 breaths/minute.(adult)◆ Heart rate \geq 110 beats/minute.(adult)◆ Inability to complete sentences in one breath. <p>Very severe</p> <p>Altered conscious level, exhaustion, arrhythmia, hypotension, cyanosis, silent chest, poor respiratory effort.</p> <ul style="list-style-type: none">◆ SpO₂ < 92%	
TREAT	First line treatment	Second line treatment (to be considered if the patient is not responding to first-line treatment)
	<ul style="list-style-type: none">◆ prednisolone 30–40 mg for five days for adults and 1mg per kg for three days for children, or longer, if necessary, until they have recovered;◆ salbutamol in high doses by metered dose inhaler and spacer (e.g. four puffs every 20 minutes for one hour) or by nebulizer;◆ oxygen, if available, and if oxygen saturation levels are low (below 90%). <p>Reassess at intervals depending on severity</p> <th><ul style="list-style-type: none">◆ Increase frequency of dosing via a metered dose inhaler and spacer or by nebulizer, or give salbutamol by continuous nebulization at 5 – 10 mg per hour, if appropriate nebulizer available;◆ for children, nebulized ipratropium, if available, can be added to nebulized salbutamol.</th>	<ul style="list-style-type: none">◆ Increase frequency of dosing via a metered dose inhaler and spacer or by nebulizer, or give salbutamol by continuous nebulization at 5 – 10 mg per hour, if appropriate nebulizer available;◆ for children, nebulized ipratropium, if available, can be added to nebulized salbutamol.

ADVISE**Asthma - Advice to patients and families****Regarding prevention :**

- ◆ avoid cigarette smoke and trigger factors for asthma, if known;
- ◆ avoid dusty and smoke-filled rooms;
- ◆ avoid occupations that involve agents capable of causing occupational asthma;
- ◆ reduce dust as far as possible by using damp cloths to clean furniture, sprinkling the floor with water before sweeping, cleaning blades of fans regularly and minimizing soft toys in the sleeping area;
- ◆ eliminate cockroaches from the house (when the patient is away) and shake and expose mattresses, pillows, blankets, etc. to sunlight.

Regarding treatment, ensure that the patient or parent :

- ◆ knows what to do if their asthma deteriorates;
- ◆ understands the benefit from using inhalers rather than tablets, and why adding a spacer is helpful;
- ◆ aware that inhaled steroids take several days or even weeks to be fully effective.

Annex (14.4) Management of Chronic Obstructive Pulmonary Disease (for Doctors and Basic Health Staff)

ASSESS

Assess severity

Moderate - if breathless with normal activity

Severe - if breathless at rest

Measure PEFR and oxygen saturation, if possible.

TREAT

- ◆ inhaled salbutamol, two puffs as required, up to four times daily
- ◆ if symptoms are still troublesome, consider low-dose oral theophylline;
- ◆ if ipratropium inhalers are available, they can be used instead of, or added to, salbutamol, but they are more expensive.

ADVICE

COPD - Advice to patients and families

- ◆ ensure they understand that smoking and indoor air pollution are the major risk factors for COPD – therefore, patients with COPD must stop smoking and avoid dust and tobacco smoke;
- ◆ keep the area where meals are cooked well ventilated by opening windows and doors;
- ◆ cook with wood or carbon outside the house, if possible, or build an oven in the kitchen with a chimney that vents the smoke outside;
- ◆ stop working in areas with occupational dust or high air pollution – using a mask may help, but it needs to have an appropriate design and provide adequate respiratory protection.

Annex (14.5) Management of Exacerbation of COPD (for Doctors only)

TREAT

- ◆ antibiotics should be given for all exacerbations;
- ◆ for severe exacerbations, give oral prednisolone 30 – 40 mg for around seven days;
- ◆ give high doses of inhaled salbutamol by nebulizer or metered dose inhaler with spacer; (e.g. four puffs every 20 minutes for one hour) or by nebulizer;
- ◆ oxygen, if available, should be given by a mask that limits the concentration to 24 % or 28 %.

Annex (15) PEN protocol 4

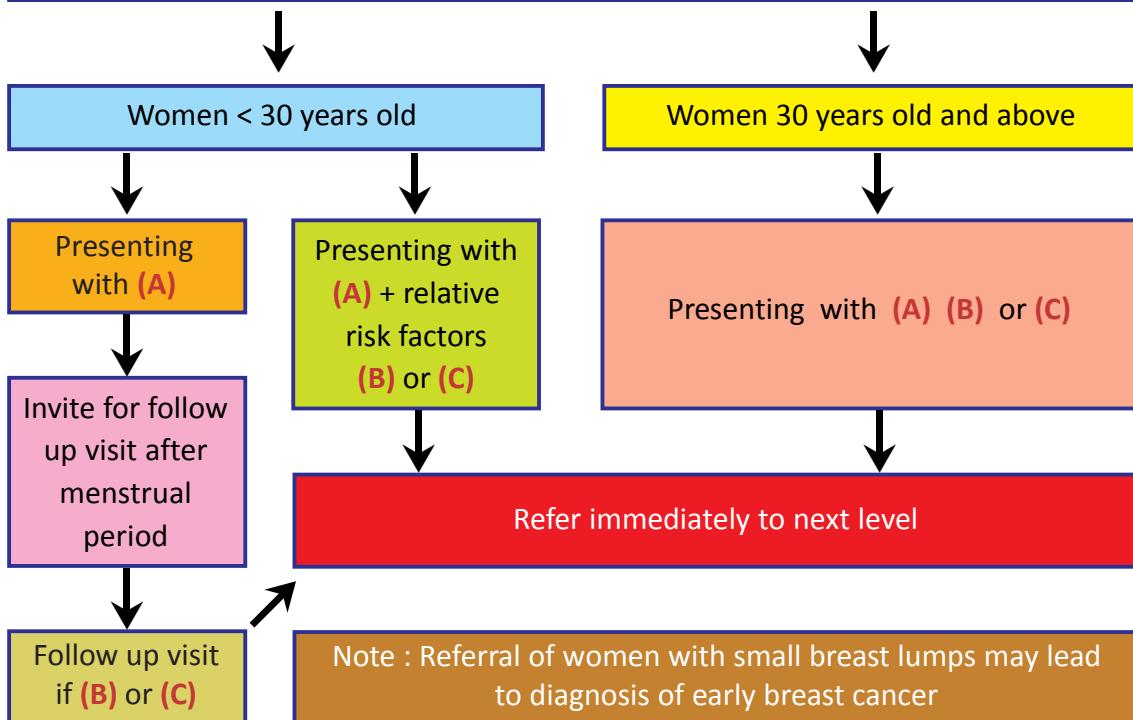
Annex (15.1) Assessment and referral of women with suspected breast cancer at primary health care

Women who present the following persistent and unexplained signs and symptoms should seek consultation at a PHC :

- (A) Breast lump, or any change in the shape or consistency of the breast
- (B) Breast lump that enlarges and/or is fixed and hard
- (C) Other breast problems (i.e. eczematous skin changes, nipple retraction, peau d'orange, ulceration, unilateral nipple discharge – particularly bloody discharge – lump in the axilla) with or without palpable lump

Assess likelihood for breast cancer

- ◆ Assess signs and symptoms (i.e. history, intensity, duration, progression)
- ◆ Identify relevant breast cancer risk factors (such as age, family history, previous history of breast cancer, chest irradiation)
- ◆ Clinical examination of both breasts, axillae and neck
- ◆ Differential diagnosis: benign breast diseases (e.g. fibroadenoma, fibroadenosis, mastitis, abscess, etc.)



Women age 30 years is demarcation line for assessment. Many low- and middle-income countries face now a double burden of breast and cervical cancer which represent top cancer killers in women over 30 years old. Control of specific modifiable breast cancer risk factors as well as effective integrated prevention of non-communicable diseases which promotes healthy diet, physical activity and control of alcohol intake, overweight and obesity, could eventually have an impact in reducing the incidence of breast cancer in the long term. Early detection in order to improve breast cancer outcome and survival remains the cornerstone of breast cancer control (Anderson et al., 2008).

Mammography screening is the only screening method that has proven to be effective

In low and middle income countries, the proportion of breast cancers attributable to these risk factors was 18% and physical inactivity was the most important determinant (10%).

The differences in breast cancer incidence between developed and developing countries can partly be explained by dietary effects combined with later first childbirth, lower parity, and shorter breastfeeding (Peto, 2001). The increasing adoption of western life-style in low- and middle-income countries is an important determinant in the increase of breast cancer incidence in these countries.

Breast self-examination (BSE)

There is no evidence on the effect of screening through breast self-examination (BSE). However, the practice of BSE has been seen to empower women, taking responsibility for their own health. Therefore, BSE is recommended for raising awareness among women at risk rather than as a screening method.

Key messages of Breast Cancer

1. Breast cancer is the most commonest cancer in women of Myanmar
2. Lump in breast is not assumed as breast cancer
3. No pain in early stage of breast cancer

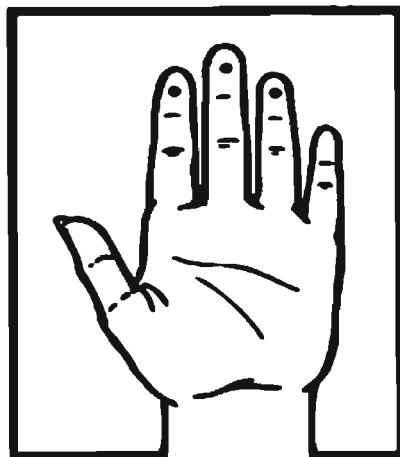
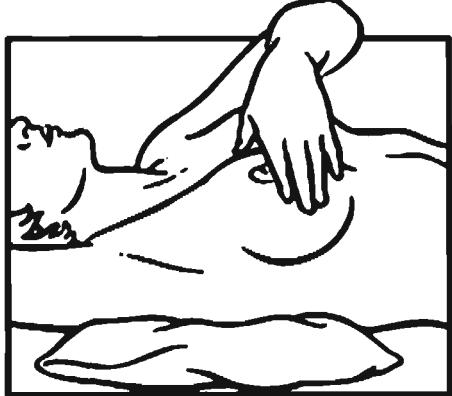
Non-cancerous tumor must be removed by surgical operation and not spread to other areas as well as not dangerous to life.

Breast cancer spreads to adjacent areas of body and also spreads to other areas of body through blood and lymphatic vessels. It is dangerous to life but early case detection and treatment taken can lead to long time survival.

How to assess breast lump by self - examination ?

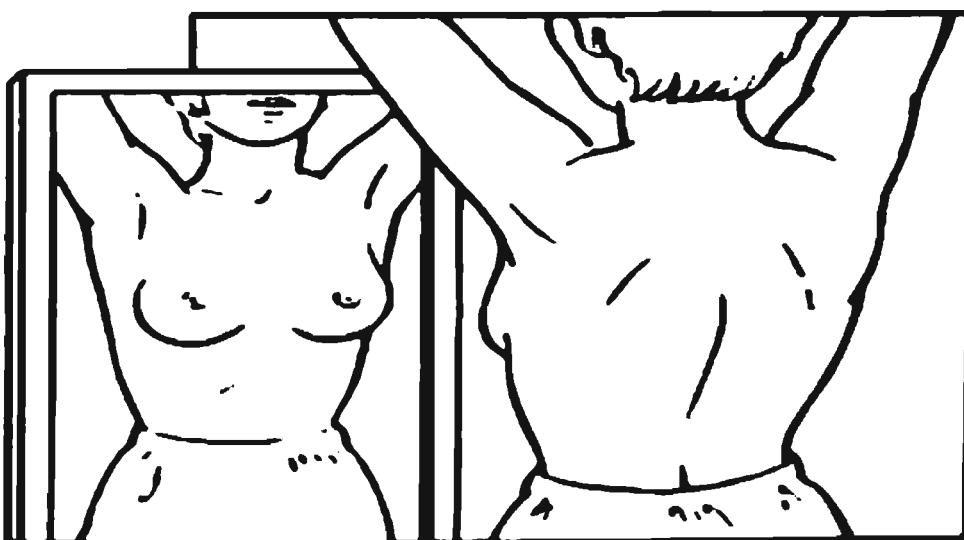
Regular examination of breast must be done after menstruation monthly. If a mass appeared in breast, it would be noticed immediately. Those women with irregular menstruation must be regularly examined at a day chosen by themselves. BSE would be done within few minutes on lying or supine position.

1. On supine position, a pillow must be placed under right shoulder and raised right hand behind head. Left hand should be used for palpation of right breast. For palpation of left breast, same procedure done at left side and palpate by right hand.
2. Use the pads of the middle 3 fingers of one hand.
3. Press downward using a circular motion.
4. Apply steady pressure, pushing down to the level of the chest wall. Apply enough pressure to palpate to 3 levels of depth: first superficial, then medium, and then deep level of the chest wall.
5. Make sure to palpate the nipple and areolar regions, above and below clavicle, and axilla region



6. In front of mirror, it should be looked at breast to detect skin depression, and changes of nipple such as color, position and inflammation.

When you look at your breast, you have to detect the following :



1. Level of breast same or not
2. Skin depression over breast present or not
3. Visible mass on breast present or not
4. Nipple retraction present or not
5. Any change in skin texture of nipple
6. Size of breasts is equal or not
7. Swelling of arm present or not
8. Blood or fluid come out from nipple or not
9. Mass in neck and axilla present or not

CBE (Clinical Breast Examination) by Medical Officer

Patient should receive breast examination at least once a year during annual physical or gynecological check-up. Before receiving breast examination, patient has to perform a visual inspection of both breasts and nipples so that she may inform her findings to the MO. Then MO will do a physical examination similar to your self-exam, feeling all the breast tissue and tissue under both of arms. MO has to look for any puckering or changes of the skin around the breast, abnormal discharge or orientation of nipple or any lump which could be a signal for underlying cancers.

Especially above 40 years old women should be done and suspected case must be referred to specialist for investigation and treatment shown as below :

1. Clinical examination
2. Mammography
3. Ultrasound on breast
4. FNAC (Fine Needle Aspiration Cytology)
5. Biopsy
6. Treatment based on severity of disease

Treatment

1. Surgery
2. Radiotherapy
3. Medical treatment
4. Hormonal therapy
5. Others (gene therapy)

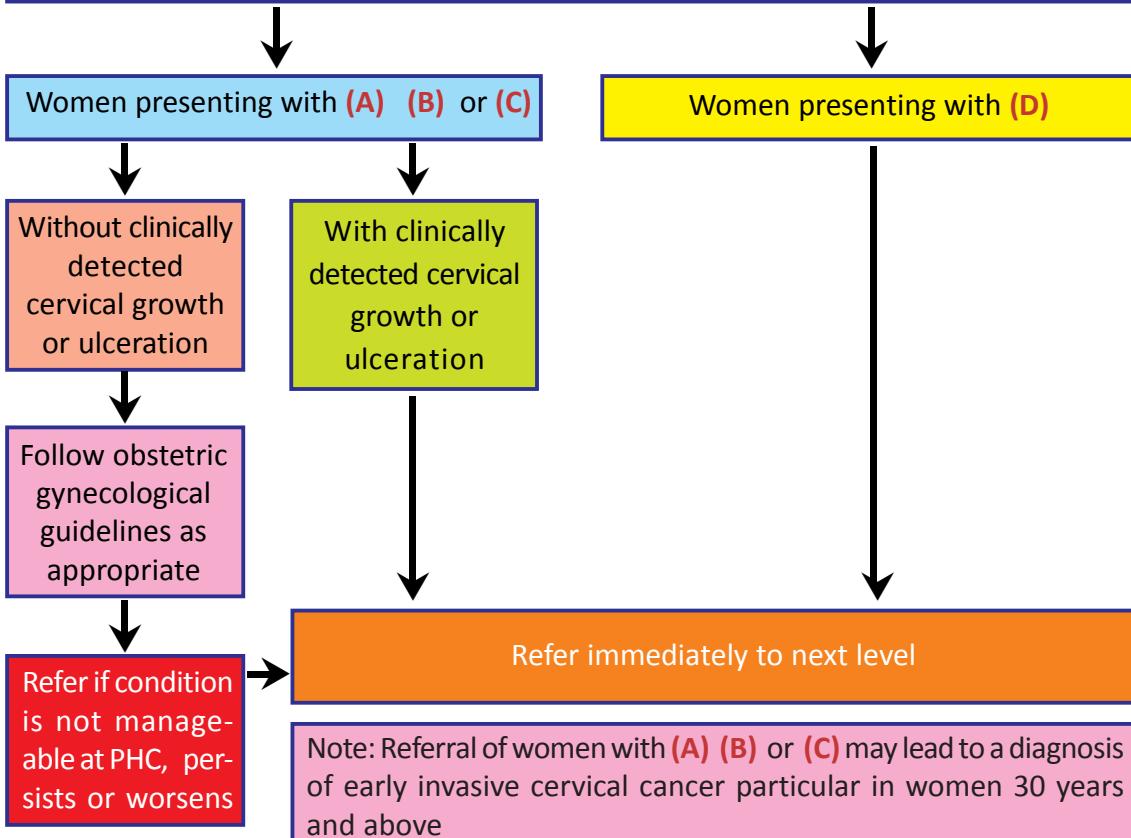
Annex (15.2) Assessment and referral of women with suspected cervical cancer at primary health care

Women who present the following persistent and unexplained signs and symptoms should seek consultation at PHC center:

- (A)** Abnormal vaginal bleeding
(i.e. after coitus, between menstrual periods, post menopause)
- (B)** Foul-smelling discharge
- (C)** Pain during vaginal intercourse
- (D)** Any of the above associated with palpable abdominal mass with persistent low back or abdominal pain

Assess likelihood for cervical cancer

- ◆ Assess signs and symptoms (i.e. history, intensity, duration, progression)
- ◆ Identify relevant risk factors: age (30 years old and above)
- ◆ Speculum examination
- ◆ Differential diagnosis: abortion in pre-menopausal women, infections (e.g. Chlamydiae, gonococcal, etc.), genital ulcers, cervical inflammation, uterine polyps, dysfunctional uterus hemorrhage, endometrial or vaginal cancer



Risk Factors of Carcinoma of Cervix

1. Early marriage
2. Multiple sex partners
3. Sexual contact with STD male
4. Prolong use of contraceptive drugs
5. Multiple births
6. Women with smoking
7. Presence of papilloma virus and herpes virus at uterus and cervix
8. Improper personal hygiene
9. Vitamin A and C deficient women

Signs and symptoms of carcinoma of cervix

1. White discharge
2. Abnormal vaginal bleeding
3. Pain at suprapubic area and back
4. Tenderness, bleeding after sexual contact
5. Difficulties in micturition (blood in urine. difficulties in urination)

Prevention of carcinoma of cervix

Early case detection done by using PAP smear.

1. PAP smear examination done once a year in 3 consecutive years for sexual exposed women age 20 to 60 years. If not, once per 3 years should be done.
2. Suspected case should be done with colposcopy and biopsy taken for examination

Prevention of carcinoma of cervix

3. To avoid early marriage or sexual contact
4. Personal hygiene especially cervix areas
5. To avoid multiple sexual partners
6. No smoking
7. To take health diet with Vitamin A, Vitamin C and other vitamins

Annex (15.3) Facts about oral cancer

Common cancer sites are:

1. Tongue
2. Floor of tongue
3. Lip
4. Cheek
5. Gum
6. Tonsil
7. Oral pharynx

Causes of oral cancer

1. Smoking
2. Chewing betel nut
3. Betel and tobacco leaves placed in oral cavity
4. Chronic traumatization with sharp teeth
5. Improper hygiene of oral cavity
6. Vitamin A and C deficiency

Prevention of oral cancer

1. Stop smoking
2. Do not take or place tobacco leaves in oral cavity
3. Do not place Betel nut in oral cavity
4. Do not drink alcohol
5. Emphasis on Teeth or Oral hygiene

Treatment of oral cancer

1. Surgery
2. Radiotherapy
3. Chemotherapy

Symptoms of oral cancer

Visit your doctor immediately if any of the following symptoms persist for more than two weeks:

- Sores, swellings, lumps or thick patches anywhere in or around your mouth or throat
- Areas of red or white lesions in your mouth or lips
- The feeling of a lump or object stuck in your throat
- Swellings that make wearing dentures uncomfortable
- Numbness, pain or tenderness anywhere in your mouth, including your tongue
- Pain in one of your ears but without any loss of hearing
- Trouble moving your jaw or tongue, or problems with chewing, swallowing or speaking
- Loose teeth with no apparent dental cause
- Lingering sore throat or hoarseness

Source: National Institute of Dental Craniofacial Research (NIDCR), Colgate oral care center

When to do Oral Self - Examination (OSE)

All habitual tobacco users should do it once a month.

How to do it :

- Rinse the mouth with water and stand before a mirror in adequate light.
- Look in the mirror for any abnormal white or red patch, ulcer or roughened area, granular area or swelling in the mouth.
- If any such area is seen, the suspicious area should be felt with the fingers.
- Normal oral mucosal is soft and pink.
- Consult a doctor if any abnormal area is found.



Oral self-examination can detect oral lesions at an early stage

Form (1)

Annex (16) NCD ရေးကြော်ချွေးခြားခြင်းများ မှ ထုတ်ပေါင်းခြင်း

Participants' Registry for NCD Screening

Form (1)

Note - Invitation should be given to people who meet one of the following criteria.

- Age \geq 40 years (အသက ၄၀ နှင့် အထက်)
- Smokers (ဆေးလိပ်သော်သူများ)
- Waist circumference (\geq 80cm in women, \geq 90 cm in men) {ခါးဝတ်လည် အတိုင်းအထွေ \geq 80cm (မ) နှင့် \geq 90cm (များ) }
- Known hypertension (သွေးတိုးအရာရှင်ရှိသူများ)
- Known diabetes mellitus (သွေးပို့ဆေးရေးရှိသူများ)
- History of premature CVD in first degree relatives (သွေးပို့ဆေးအောင်အကြော်ချော်တွင် ထယ်စွဲထုတွယ်သွေးတိုးအောင် ပြန်လည်သောရာအလင်ရှိသူများ)
- History of Diabetes or Kidney disease in first degree (သွေးပို့ဆေးအောင်အခြားတွင် သွေးခိုးခိုးရှိနှင့် ကျောတ်တပ်ပေါ်နေရာတွင် ပြန်လည်သောရာအလင်ရှိသူများ)

DM = Diabetes Mellitus (သွေးပို့ သွေးရှိ)

Known

- person who was diagnosed as having Diabetes Mellitus by registered health care personnel (သွေးပို့သွေးရှိရှိသူ၏ ဆရာတ် / တန်းမာဇား ဝန်ထမ်းမှ ရေးရာသတ်မှတ်ထားပြီး)
- person who is already taking treatment (diet control / drug) for diabetes mellitus (သွေးပို့သွေးရှိရေးရှိန် တော်မှ အစာအစာ / ဆေးပါး) ပိုလုပ်နေသူ၏)

New

- person whose blood sugar measurement meets the diagnosis criteria of PEN protocol
- သွေးတွေ့အချို့မြတ် စဉ်ဆေးရှုတွင် PEN protocol အစ သွေးပို့သွေးရှိ ရေးရာသတ် ပို့သွေးရှိ

No

- person whose blood sugar measurement does not meet the diagnosis criteria of PEN protocol
- သွေးတွေ့အချို့မြတ် စဉ်ဆေးရှုတွင် PEN protocol အစ သွေးပို့သွေးရှိ ရေးရာသတ် ပို့သွေးရှိ

Form (1)

H/T = Hypertension (အော်ပိုးကြပါ)

known

- person who was diagnosed as having Hypertension by registered health care personnel (ເຂົ້າທີ່ເຮັດວຽກ ສັນຕະພາບ ຂະໜາຍ ຂະໜາຍ ອົງກະຕາຍ ອົງກະຕາຍ)
- person who is already taking treatment for hypertension (ເຂົ້າທີ່ເຮັດວຽກ ຂີ່ຕິດຕາມ ຕ່າວະພຸ ລົ່ມຕົກລວມ)

New

No

Smoking

A - No s

Chewing Tobacco

A - No Tobacco chewer(did not chew tobacco), B - Ex-tobacco chewer(did not chew tobacco during last year), C - Current tobacco chewer

Alcohol Consumption

A - No drinker (did not drink alcohol), B - Social Drinker, C - Heavy drinker (drinking alcohol 4 days or more in a week)

Annex (17) Clinical Record for NCDs Patient (NCD လူနာမှတ်တမ်း)

Health Facility Name _____

Patient Name _____

Age _____

Registration No: _____

Gender : Male or Female

Address/Contact No. _____

1. History / Complaint

2. Investigations

	Visit 1 Date -----		Visit 2 Date -----		Visit 3 Date -----		Visit 4 Date -----		Decrease CVD Risk
10 years cardiovascular risk	1. < 10% 2. 10 to < 20% 3. 20 to < 30% 4. 30 to < 40% 5. ≥ 40%		1. < 10% 2. 10 to < 20% 3. 20 to < 30% 4. 30 to < 40% 5. ≥ 40%		1. < 10% 2. 10 to < 20% 3. 20 to < 30% 4. 30 to < 40% 5. ≥ 40%		1. < 10% 2. 10 to < 20% 3. 20 to < 30% 4. 30 to < 40% 5. ≥ 40%		
Fasting Blood Glucose									
Random Blood Sugar									
Resting SBP (Two readings at each visit) mmHg									
Resting DBP (Two readings at each visit) mmHg									
Currently on antihypertensive medication	Yes	No	Yes	No	Yes	No	Yes	No	
Cholesterol level (mmol/L)									
Urine albumin									
Peak flow rate									
Foot examination of diabetes	Yes	No	Yes	No	Yes	No	Yes	No	
Referral for Eye examination in diabetes	Yes	No	Yes	No	Yes	No	Yes	No	
Eye examination in diabetes	Yes	No	Yes	No	Yes	No	Yes	No	
Waist circumference (cm)									
Body Mass Index (BMI)									
Tobacco smoking	Yes	No	Yes	No	Yes	No	Yes	No	
Smokeless tobacco	Yes	No	Yes	No	Yes	No	Yes	No	
Counseling tobacco cessation	Yes	No	Yes	No	Yes	No	Yes	No	
Counseling diet/physical activity	Yes	No	Yes	No	Yes	No	Yes	No	
Suspected Cancer (Oral/ Breast/ Cervical)	Yes	No	Yes	No	Yes	No	Yes	No	
Medicines and daily dose									
Referral reasons (within code number)									
Feedback from higher level	Yes	No	Yes	No	Yes	No	Yes	No	

လူနာ၏ရာဇဝင်နှင့် စမ်းသပ်ခို့ဆေးချက်များတွင် အောက်ဖော်ပြပါအချက်များမှ ဘဝီခုခု ရှိနေပါက အထူးကူးကူးနေဆားရုံ / အထက်အဆင့်သို့ လွှဲပြောင်းပေးရန်အတွက် ကုမ္ပဏီပါတ် (Code No.) များ

- (၁) သွေးပေါင်ချိန် 200 / 120 mmHg အထက်ဖြစ်လျှင် (အလျင်အမြန် လွှဲပို့ရန်)
- (၂) အသက် ၄၀-နှစ်အောက်လူနာများတွင် သွေးပေါင်ချိန် 140 / 90 mmHg (သို့မဟုတ်) 140 / 90 mmHg အထက် ဖြစ်လျှင်
- (၃) လေဖြန်းခြင်း (သို့မဟုတ်) လေသင်တုန်းဖြတ်ခြင်း
- (၄) နှလုံးစုံအောင့်ခြင်း (Chest pain)၊ ကျောက်ကပ်အားနည်းခြင်း၊ ဖောရောင်ခြင်း၊ ဆီးထဲ အသားခါတ်ပါခြင်း (Renal failure) ? နှလုံးအလုပ် ကောင်းစွာမလုပ်နိုင်ခြင်း၊ ဖောရောင်ခြင်း၊ မောခြင်း၊ ပက်လက်လွှဲ အိပ်မရခြင်း (Heart failure)
- (၅) အသစ်တွေ့ သွေးချို့ဆီးချို့ရောဂါရိ လူနာတွင် ဆီးအတွင်း ကိုတုန်းပါတ် (J +) တွေ့လျှင် (သို့မဟုတ်) အသစ်တွေ့ သွေးချို့ဆီးချို့ရောဂါ လူနာသည် အသက် ၃၀-နှစ်အောက် ဖြစ်လျှင်
- (၆) သွေးအတွင်း အဆီပါတ် (Total cholesterol) $> 8 \text{ mmol / L}$ ကျော်နေလျှင်
- (၇) ဆီးချို့သွေးချို့ရောဂါရှင်များတွင် ပြင်းထန်စွာ ရောဂါးဝိုင်းခြင်းနှင့် (သို့) ခြေထောက်အနာရှိလျှင်
- (၈) သွေးချို့ဆီးချို့ရောဂါရှင်များတွင် ရုတ်တရတ် အမြင်ချို့ယွင်းမှုဖြစ်လျှင်။
- (၉) နှလုံးခုန်သံတွင် အသံပိုပါခြင်း။ (Cardiac Murmurs)
- (၁၀) သွေးတိုးကုသဆေး J - မျိုး (သို့မဟုတ်) R - မျိုး ပေးသော်လည်း သွေးပေါင်ချိန် $\geq 140 / 90 \text{ mmHg}$ (သွေးချို့ဆီးချို့ရောဂါရိသူများတွင် 130 / 80 mmHg ကျော်လျှင်)၊ သွေးချို့ဆီးချို့ရောဂါရိသူများတွင် ဆီးအတွင်း အသားဓာတ်ပါခြင်း
- (၁၁) သွေးချို့ဆီးချို့ရောဂါရှင်များထဲမှာ Glidazide ပါသည်ဖြစ်စေ မပါသည်ဖြစ်စေ Metformin အမြင့်ဆုံးနှုန်း (2000 mg)၊ သောက်နေသော်လည်း သွေးအတွင်းအချို့ဓာတ် 14 mmol / L (250 mg / dl) ထက် ကျော်နေလျှင်
- (၁၂) (၂)နှစ်အတွင်း မျက်စိ စစ်ဆေးထားခြင်းမရှိလျှင်
- (၁၃) နှလုံးသွေးကြောရောဂါ ဖြစ်ပွားနိုင်ခြေ (Cardiovascular risk) မြင့်မားလျှင် ($\geq 30 \%$)
- (၁၄) Suspected Cancer ရှိနေပါက လွှဲပြောင်းပေးရန်

Form (3)

Annex (18) Daily NCD Diseases Register (နေ့စွဲ NCD ရေးရှင်မှတ်တမ်းတင်ခွာအုပ်)

Date	DD	MM	YY
1. Registration No.			
2. Name			
3. Address			
4. Old/ New Case (C/N)			
5. Age			
6. M/ F			
7. Disease			
8. CVD risk			
< 10 %			
10 % - < 20 %			
20 % - < 30 %			
30 % - < 40 %			
40 % >			
9. Visit No.			
10. Treatment			
11. Referral			
1. Township / 2. District / 3. Region / 4. Central			

Note - Cardiovascular disease - နှစ်းချေးခွေးချေးခွေးများ ရောဂါ (ဗိုလ်လုပ်) ခြောင်းသွေးခြောင်းများ ရောဂါ ဗိုလ်လုပ် ခြောင်းသွေးခြောင်းများ ရောဂါ

Cerebrovascular disease - ගොවන ගොන්ස්ප්‍රෙට්ඨ්‍රිය් (ඝ්යෝනොට්) ගොග්‍රෑස්ඨ්‍රිය්

Form (4)

New

- person whose blood sugar measurement meets the diagnosis criteria of PEN protocol
- ଦେୟାଙ୍କରେ ପାଇଁ ପରିବର୍ତ୍ତନ ରହିଥାଏଇବା ଏବଂ ଏହାରେ ପରିବର୍ତ୍ତନ କରାଯାଇଥାଏଇବା ଏହାରେ ପରିବର୍ତ୍ତନ କରାଯାଇଥାଏଇବା

20

- person whose blood sugar measurement does not meet the diagnosis criteria of PEN protocol
- დევაზოგრად ინდივიდუალი PEN protocol ვა ჰქონდება დოკუმენტი

H/T = Hypertension (ՀԵՇՈՒՅՑ: ՀԵՇՈՒՅՑ)

known

- person who was diagnosed as having Hypertension by registered health care personnel (သွေးတို့ကရေးနှင့်သာကုန် / တျေးသာကုန် / တန်သာကုန်)
- person who is already taking treatment for hypertension (သွေးတို့ကရေးနှင့်ကိုယ် တွေ့သူမှ ပဲပဲတော်သူ။)

73

- person whose Blood Pressure measurement does not meet the diagnosis criteria of PEN protocol / WHO (ເວົ້າເປັນສິນຕິຫຼາດ:ຕາມ ຕົດຕະຫຼາດ:ດາວວັດ PEN

Smoking

B - Ex-smoker (did not smoke during last year), C - Current smoker

Chewing Tobacco

B - Ex-tobacco chewer (did not chew tobacco during last year), C - Current tobacco chewer

Alcohol Consumption

Form (5)

Quarterly NCD Diseases Report (NCD ဧရာկ ရ-ကောက် အခိုင်ခေါ်)

Health Facility _____ Region / State _____
 Year _____ Month _____

No. of RHC _____

1. Place of care given	2. Male / Female / Total	3. Disease			4. Patients		5. CVD Risk		6. No. of patients who complete 3 visits		7. No. of patients with decrease CVD risk after 3 visits		8. Referral		
		Suspected Cancer	Chronic Respiratory Diseases	Diabetes	Old	New	COPD	Asthma	Oral	Cervix	Diabetes	Hyperension	Cerebrovascular	Cardiovascular	Diabetes
Male															
Female															
Total															

Total Diabetes	
Total Cardiovascular Diseases	
Total Cerebrovascular Diseases	
Total Hypertension	
Total Suspected Cancer	
Total CRD	

Note -

Cardiovascular disease - နှလုံးအောင်ကြော်လျှော်းရောဂါ (သိမ္မဘာတိ) မြောက်သွေးခြားကြော်လျှော်းရောဂါနှင့်သွေးခြားကြော်လျှော်းရောဂါ

သတ်မှတ်ပြုခြင်း

Cerebrovascular disease - လောင်တိနှင့်ပြတ်ချိန် (သိမ္မဘာတိ) လောင်နှင့်

Annex (19) Referral Form (လူနာဆွန်းပို့ပုံခံ)

1. Referral Unit (လွှဲပြောင်းညွှန်းပို့ပေးသည့်ကြာန) _____
2. Name (အမည်) _____
3. Age (ပြည့်စုံးအသက်) _____ years
4. Gender (ကျား / မ) _____ (M or F)
5. Registration No. (ရေးရှိမှတ်တမ်း မှတ်ပုံတင်အမှတ်) _____
6. Date : (ရက်စွဲ) _____
7. Current Diagnosis (လက်ရှိခံစားနေရသောရေး) _____
8. Current Medication (လက်ရှိသောက်နေသောဆေးများ) _____

9. Reason for the referral (please check all what applied) (လွှဲပြောင်းညွှန်းပို့သောအကြောင်းအရာ)

10. Feedback form from higher center (အထက်အဆင့်မှ ပြန်လည်ညွှန်ကြားချက်)

- 1) Date (ရက်စွဲ) _____
- 2) Diagnosis (ရေးရှိအမည်) _____
- 3) Current Medication (လက်ရှိသောက်နေသောဆေးများ) _____

- 4) Follow-up requirements (နောက်ဆက်တွဲလိုအပ်ချက်များ) _____

- 5) Remarks (ထုံးခြားချက်) _____

မှတ်ချက် ॥ ॥ ညွှန်းပို့သော သက်ဆိုင်ရာကျိုးမာရေးဌာနသို့ ပြန်လည်ပေးပို့ပါရန် ॥

Annex (20) PEN Scaling up Indicators for Monitoring, Indicator Definitions and Calculation

Sr. No.	Objectives	Indicator and Targets	Data Source
1.	Improve access to NCD services at the primary health care level in program operated Townships	Percent of primary health care facilities with trained health service providers on PEN [at least 80% of BHS staff from the facility have satisfactory post-training test results]; Target = 20%	Regional Dept. Public Health training records
2.		Percent of PEN-trained primary health care facilities with complete sets of essential equipment [Each facility must have all of the following: Digital BP instrument, stethoscope, tape measure, weighing scale, height board, glucometer]; Target = 95%	PEN facility assessment report
3.		Percent of PEN-trained primary health care facilities with essential medicines [Only two or less essential medicines out of stock at the facility at time of assessment]; Target = 90 %	
4.		Percent of PEN-trained primary health care facilities implementing PEN [Each PEN-implementing facility should screen at least 1% of covered population for DM and HTN in previous 6 months with a Clinical Record showing their assigned 10 - year Cardiovascular(CV) risk category]; Target = 90%	Township quarterly reports based on RHC quarterly reports
5.		Percent of PEN-covered population screened in each PEN-implementing facility; Target = 1 % (n = population screened) [Access to services by population]	
6.		Number of diabetes patients diagnosed through screening in each PEN-implementing facility; Target = To be determined [At-risk population identified]	
7.		Number of hypertension patients diagnosed through screening in each PEN-implementing facility; Target = To be determined [At-risk population identified]	

8.		Percentage of patients diagnosed as > 30% CV risk category who complete 3 PEN visits or were referred to next level of care; Target = To be determined from Initial Phase roll-out results [Utilization of services by diagnosed patients]	Evaluation via audits of RHC records
9.		Median decrease in 10-year CV risk factor levels after 3 PEN visits, amongst those completing 3 PEN visits; Target = To be determined from Initial Phase roll-out results [Therapeutic effectiveness]	Evaluation via audits of RHC records
10.	Training of Township Health Supervisory staff as PEN Trainers of Basic Health Staff to support national expansion of NCD health services delivery	Medical Officers (TMOs, TPHOs, MOs) from townships and state/regional health departments have increased understanding in NCD trends, burdens and management, including supervision and M&E of PEN at RHCs and Sub - RHCs. Target = Three participants per township	Training records from Regional Health Departments
11.	PEN Implementation Support - Supervision, Referrals, Supplies, and Training Materials for Basic Health Staff	Percentage of basic health staff from PEN implementing facilities trained in PEN services for NCD prevention and management Target = 90 %	Training records from Regional Health Departments

Indicator Definitions and Calculations

Indicator (1)

- (A) **Definition** : Percent of primary health care (PHC) facilities with trained health service providers on PEN [at least 80 % of BHS staff from the facility have satisfactory post-training test results]
- (B) Total number of PHC facilities in the township
- (C) Total number of PHC facilities in the township with trained health service providers on PEN
- (D) Calculation : $A = C / B \times 100$

Indicator (2)

- (A) **Definition** : Percent of PEN-trained primary health care facilities with complete sets of essential equipment [Each facility must have all of the following: Digital BP instrument, stethoscope, tape measure, weighing scale, height board, glucometer]
- (B) Total number of PEN trained PHC facilities in the township
- (C) Total number of PEN-trained primary health care facilities with complete sets of essential equipment
- (D) Calculation : $A = C / B \times 100$

Indicator (3)

- (A) **Definition** : Percent of PEN-trained primary health care facilities with essential medicines [Only two or less essential medicines out of stock at the facility at time of assessment]
- (B) Total number of PEN trained PHC facilities in the township
- (C) Total number of PEN-trained primary health care facilities with essential medicines
- (D) Calculation : $A = C / B \times 100$

Indicator (4)

- (A) **Definition** : Percent of PEN trained primary health care facilities implementing PEN [Each PEN-implementing facility should screen at least 1% of covered population for DM and HTN in previous 6 months with a Clinical Record showing their assigned 10-years Cardiovascular (CV) risk category]
- (B) Total number of PEN trained PHC facilities in the township
- (C) Total number of PEN-trained primary health care facilities implementing PEN
- (D) Calculation : $A = C / B \times 100$

Indicator (5)

- (A) **Definition :** Percent of PEN-covered population screened in each PEN-implementing facility
- (B) Total number of PEN covered population in the facility
- (C) Total number of population screened by PEN-implementing facility
- (D) Calculation : $A = C / B \times 100$

Indicator (6)

- (A) **Definition :** Number of diabetes patients diagnosed through screening in each PEN-implementing facility
- (B) Calculation: Actual number of patients diagnosed as Diabetes Mellitus during the screening

Indicator (7)

- (A) **Definition :** Number of hypertension patients diagnosed through screening in each PEN-implementing facility
- (B) Calculation: To estimate actual number of patients diagnosed as hypertension during the screening

Indicator (8)

- (A) **Definition :** Percentage of patients diagnosed as > 30% CV risk category who complete 3 PEN visits or were referred to next level of care
- (B) Total number of patients diagnosed as > 30% CV risk category attended the community clinics
- (C) Total number of patients diagnosed as > 30% CV risk category who complete 3 PEN visits or were referred to next level of care
- (D) Calculation : $A = C / B \times 100$

Indicator (9)

- (A) **Definition :** Median decrease in 10-year cardiovascular risk factor levels after 3 PEN visits, amongst those completing 3 PEN visits
- (B) To find total number of patients who complete 3 PEN visits at the community clinics
- (C) To find total number of patients with decrease in 10-years cardiovascular risk factor levels after completion of 3 PEN visits
- (D) Calculation : To find median decrease in 10-year cardiovascular risk factor levels

Indicator (10)

- (A) **Definition :** Medical Officers (TMOs, TPHOs, MOs) from townships and state/regional health departments have increased understanding in NCD trends, burdens and management, including supervision and M&E of PEN at RHCs and Sub-RHCs.
- (B) Calculation = To identify three participants per department

Indicator (11)

- (A) **Definition :** Percentage of basic health staff from PEN implementing facilities trained in PEN services for NCD prevention and management
- (B) Total number of basic health staff from PEN implementing facilities
- (C) Total number of basic health staff from PEN implementing facilities trained in PEN services for NCD prevention and management
- (D) Calculation : $A = C / B \times 100$

Annex (21) Supervision Checklist at Township Level

(To carry out by the central / regional / district level supervisors every three month)

Name of Township -----

Region/ State -----

Name and designation of supervisor -----

Name and designation of supervisee -----

Date : -----

1. Health Manpower at Township Level (Use another table for specific facility)

Category	No. of staff sanctioned	No. of staff appointed	No. of staff working
TMO			
TPHO			
MO / AS			
THN			
HA 1			
Nurse			
HA			
PHS (1)			
LHV			
MW			
PHS (2)			
AMW			
CHW			
Total			

2. Minimum Essential Equipment List at Township Level (Use another table for specific facility)

Equipment	Functioning	Non - functioning	Quality Control	How to maintain	Remark
a. Blood pressure measuring devices (BPMD) • Mercury • Aneroid • Automatic					
b. Oxygen cylinders (full)					
c. Weighing machines					

d. ECG machines					
e. Measuring tape					
f. Nebulizers					
g. Peak flow meter					
h. Stethoscope					
i. Thermometer					
j. Health education material					
k. Pulse oximeter					
l. Spacer					
m. Glucometer					
n. Ophthalmoscope					
o. WHO CVD risk score chart					
p. Locally adapted guideline					

3. Essential Medicine List at Township Level (Use another table for specific facility)

Generic Medicines	Always available	Sometimes available	Not available at all
Gliclazide			
Metformin			
Amlodipine			
Atenolol			
Enalapril			
Aspirin			
Atorvastatin			
Other drugs			

3. Available Health Services at Township Level (Use another table for specific facility)

Are the following procedures being conducted at the facility when needed?

a) Administration of oxygen (via mask or tube)	Yes	No, why not ?
b) Administration of intravenous (IV) fluids/drip	Yes	No, why not ?
c) IV injection	Yes	No, why not ?

d) Intramuscular (IM) injection	Yes	No, why not ?
e) Subcutaneous injection	Yes	No, why not ?
f) Electrocardiography (ECG)	Yes	No, why not ?
g) Cardiopulmonary resuscitation	Yes	No, why not ?
h) Manual ventilation with a bag valve mask resuscitator (ambu-bag)	Yes	No, why not ?
i) Visual acuity examination	Yes	No, why not ?
j) Examination for neuropathy with knee hammer / tuning fork, etc.	Yes	No, why not ?
k) Peak flow test	Yes	No, why not ?
l) Ophthalmoscopy	Yes	No, why not ?

5. Available Laboratory Services at Township Level (Use another table for specific facility)

Type	At facility	At referral	Both
Urine albumin/protein testing			
Urine glucose / sugar			
Blood sugar			
Blood cholesterol			

6. Referral of Patients

A. Referral pathway (Describe the referral system) _____

B. Distance to nearest referral institution _____ mile

C. Most frequent means of transport _____

D. Ambulance service available (Y) or (N) _____

E. Reason for referral [further management (acute/emergency/severe) /additional test]

F. Feedback Response (Y) or (N) _____

7. Service utilization

- A. No. of visit /patient during last month in OPD _____
 - 1. No. of visits for heart disease, High BP, stroke, heart failure _____
 - 2. No. of visits for diabetes _____
 - 3. No. of visits for asthma or chronic cough _____
 - 4. No. of visit for cancer patients _____

- B. No. of inpatient during last month in the hospital _____
 - 1. No. of visits for heart disease, High BP, stroke, heart failure _____
 - 2. No. of visits for diabetes _____
 - 3. No. of visits for asthma or chronic cough _____
 - 4. No. of visit for cancer patients _____

8. Record keeping

- A. Patient record-form and filling / keeping-(Y)/(N) _____
- B. Patient register and filling / keeping-(Y)/(N) _____
- C. Facility records and filling / keeping-(Y)/(N) _____
- D. Medicines and consumable — Stocks and Ledger and Filling/ Keeping-(Y)/(N) _____

9. Financing and Administration

- A. Were the services of NCD delivered free or paid?

- B. If NCD services were paid, what is the type of payment? _____ (Partial/Full)

- C. Is there any contribution from the community?
Amount of contribution per year? _____

10. Community participation

- A. Is there any social mobilization for NCDs services (Yes or No)? _____
- B. Who are the Key Stakeholders?

- C. What type of support given by community?

11. Key observations at facility _____

12. Recommendations and actions _____

Annex (22) Essential Technologies and Tools for Implementing Essential NCD Interventions in Primary Care

Technologies and Tools

- Thermometer
- Stethoscope
- Blood pressure measurement device*
- Measurement tape
- Weighing machine
- Peak flow meter**
- Spacers for inhalers
- Glucometer
- Blood glucose test strips
- Urine protein test strips
- Urine ketones test strips
- WHO/ISH risk prediction charts
- Evidence based clinical protocols
- Flow charts with referral criteria
- Patient clinical record and register
- Audit tools

Add when resources permit:

- Nebulizer
- Pulse oximeter
- Blood cholesterol assay
- Lipid profile
- Serum creatinine assay
- Troponin test strips
- Urine microalbuminuria test strips
- Tuning fork
- Electrocardiograph(if training to read and interpret electrocardiograms is available)
- Defibrillator

* For facilities with non- physician health workers a validated blood pressure measurement device with digital reading is preferable for accurate measurement of blood pressure

** Disposable mouth pieces required. Peak flow meters with one-way flow preferable

Medicines used in diabetes and hypertension

Gliclazide (Sulphonyl ureas)

Indication

Used for the treatment of type 2 diabetes mellitus

Contraindication

Contraindicated in the presence of Ketoacidosis Should be avoided in

- Actue porphyria
- Pregnancy
- Breast feeding

Side effect

Gastro-intestinal disturbance (nausea, vomiting, diarrhea and constipation). Hypoglycemia, weight gain. Disturbance in liver function (Cholestasis, hepatitis and hepatic failure). Rarely allergic skin reaction.

Dosage

Initially 40-80 mg daily, adjusted according to response, up to 160 mg as a single dose ,with breakfast, higher dose divided; maximum 320 mg daily

Gliclazide MR 30 - 60 mg, maximum dose 120 mg

Metformin (biguanides)

Indication

Used in type 2 diabetes mellitus with obese patient

Contraindication

Contraindicated in

- Ketoacidosis
- Plan for Iodine containing X ray contrast media

Should be avoided in renal Impairment ,severe heart failure and liver failure

Side Effect

- Anorexia, nausea, vomiting, diarrhea, abdominal pain, taste disturbance

Dosage

Adult and Child over 10 years initially 500 mg with breakfast for at least 1 week then 500 mg with breakfast and evening meal for at least 1 week then 500 mg with breakfast , lunch and evening meal, usual maximum 2 g daily in divided doses

Amlodipine

Indication

Hypertension, prophylaxis of angina

Contraindication

Cardiogenic shock, unstable angina, significant aortic stenosis.

Side effect

GI disturbance (abdominal pain, nausea) palpitation, flushing, oedema, headache, dizziness, sleep disturbance, fatigue

Dosage

In hypertension and angina

Initially 5mg once daily maximum 10 mg once daily

Atenolol**Indication**

Hypertension, Angina, Arrhythmias

Contraindication

Asthma, uncontrolled heart failure, marked bradycardia, hypotension, second or third degree AV block, cardiogenic shock, metabolic acidosis, severe peripheral arterial disease

Side effect

GI disturbance, bradycardia, heart failure, hypotension, peripheral vasoconstriction, bronchospasm, dyspnea, headache, fatigue, sleep disturbance, paresthesia, dizziness, vertigo

Dosage

In hypertension, 25 -50 mg daily (high dose rarely necessary)

In angina, 100 mg daily in 1 or 2 doses

In arrhythmias, 50 to 100 mg daily

Enalapril**Indication**

Hypertension, Symptomatic heart failure, Prevention of symptomatic heart failure in patient with asymptomatic left ventricular dysfunction

Contraindication

Patient with ACEI hypersensitivity. Should be avoided in pregnancy (they are adversely affect fetal and neonatal blood pressure control and renal function, skull defects and oligohydramnios), breast feeding

Side effect

Profound hypotension, renal impairment and persistent dry cough. Gastro-intestinal disturbance (Nausea, vomiting, dyspepsia, diarrhea, constipation, abdominal pain)

Dosage

In hypertension- Used alone, initially 5 mg once daily. Used in addition to diuretic (a thiazide diuretic or calcium channel blocker) or in renal impairment, lower initial doses may be required .Usual maintenance dose - 20 mg once daily and maximum dose - 40 mg once daily.

In heart failure and asymptomatic ventricular dysfunction- Initially 2.5 mg once daily under medical supervision, increased gradually over 2-4 weeks to 10-20 mg daily if tolerated.

Aspirin

Indication

Secondary prevention of thrombotic cerebrovascular or cardiovascular disease

Contraindication

Contraindicated in

- Children and adolescents under 16 years(Reye's syndrome)
- Hypersensitivity to Aspirin and other NSAIDS
- Avoided in severe hepatic impairment (increased risk of gastro-intestinal bleeding in severe renal impairment.)

Side effect

Bronchospasm, GI irritation and GI bleeding

Dosage

80 mg once daily with food

Atorvastatin

Indication

Hypercholesterolaemia

Hyperlipidaemia in patient who have not responded adequately to diet and other appropriate measure

Prevention of cardiovascular events in patients at high risk of a first cardiovascular event

Contraindication

Should be avoided in Pregnancy

Side effect

Adverse muscle effects (Myalgia, myopathy, myositis, rhabdomyolysis) GI disturbance

Dosage

Primary hypercholesterolaemia and combined hyperlipidaemia usually 10 mg once daily

Annex (23) Medication List Used in Management of Asthma and Chronic Obstructive Airway Diseases

1. Inhalers

- I. Salbutamol Inhalers
- II. Fluticasone / Beclomethasone / Budesonide Inhalers
- III. Salmeterol Inhalers
- IV. Ipravent Inhalers
- V. Fluticasone + Salmeterol Inhalers
- VI. Fluticasone + Formoterol Inhalers
- VII. Tiotropium Bromide Inhalers

2. Oral Medications

- I. Salbutamol Tablets
- II. Etophylline Tablets
- III. Prednisolone Tablets
- IV. Amoxicillin Tablets
- V. Azithromycin Tablets
- VI. Cefuroxime Tablets
- VII. Montelucast Tablets

3. Respiratory Nebules

- I. Salbutamol Solution
- II. Ipravent Solution
- III. Fluticasone Solution

4. Injections

- I. Inj: Hydrocortisone Succinate
- II. Inj: Diprophyllin

5. Machines

- I. Nebulizer Machine
- II. Peak Flow Meter

Annex (24) How to Use Your Blood Glucose Meter

How to Use Your Blood Glucose Meter

What you need to test your blood glucose

Your starter kit includes the following :

- ◆ Blood glucose meter
- ◆ Lancing device
- ◆ Vial of test strips
- ◆ Lancets



Before you start

- ◆ You may need to set the date and time on the meter
- ◆ Wash and dry your hands thoroughly with warm water.



- ◆ Insert a new test strip into your meter. Place the end of the strip with the 3 contact bars as far into the meter as it can go. Your meter will turn on automatically and display a number code.
- ◆ Check the code to make sure it matches the number code on the vial of test strips.



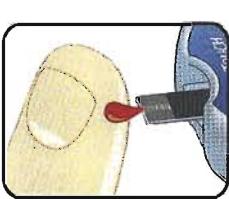
Note : if the number code on your meter doesn't match the number code on your test strip vial, you won't get an accurate reading. If the numbers don't match, follow the instructions that came with your meter to change the code on meter.

Getting test results

Step 1 : Get a blood sample

Use your lancing device and a new lancer to get a drop of blood from your fingertip. Some people find that getting a blood sample from the side of their fingertip, rather than the top, makes it easier to apply the blood to the test strip.

Step 2 : Apply blood to strip



- ◆ Apply the blood droplet to the test strip when the blood droplet symbol appears in your meter window.
- ◆ Touch and hold the drop of blood to the narrow channel at the top edge of the test strip.
- ◆ Make sure that the channel in the strip is completely full. This ensures that your meter has a large enough blood sample to give you an accurate reading.

- ◆ If your sample doesn't fill the channel, add more blood to that strip within 5 seconds. If you get an error reading, discard the strip and start again.

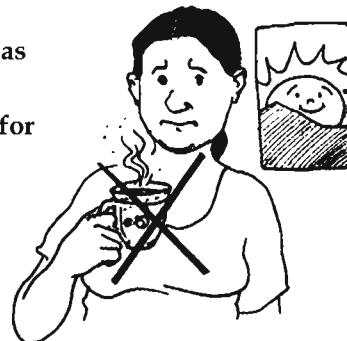
Step 3 : Read the result

Your meter will count down and display the result of your blood glucose level.

Source : living well with Diabetes Group Health

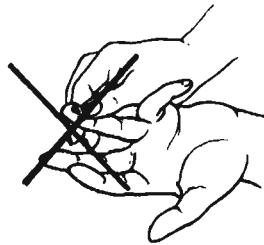
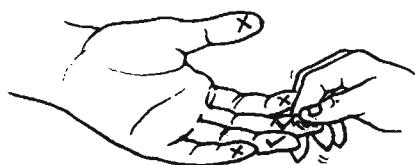
Measurement of Fasting Blood Glucose Level

Participant has to be in a fasting state for at least eight hours.



If the participant had a cup of tea in the morning they are not eligible to participate.

Participant can have water during the fasting period.



When puncturing the finger, use either middle or ring finger.

Do not squeeze the finger to take blood.

Dispose of the sharps in the sharps disposal bin



Measure the blood glucose level using the drop of blood.

For accurate measurement follow the instructions below.

1. Do the control solution test regularly.
2. For every checkup, the code number displayed on the screen should match the code number on the strips vial.
3. If it doesn't match, adjust the code number on the screen until it matches (according to the handbook).

Annex (25) How to Measure Blood Pressure by Using Various Types of Monitor

Measurement of Blood Pressure

1. Ask the participant / patient sit on chair and place their feet flat on the floor.
2. Remove any tight-fitting clothing from upper arm.
3. Place the arm of the participant / patient on the table so that the arm cuff and the heart are at the same height. If the participant / patient needs to raise their arm, put a cushion under their arm and keep the arm at an appropriate height.
4. Put the cuff on the upper arm without wrinkles. Make sure that there is a space of about two fingers between the cuff and arm.

Use Mercury Blood Pressure Monitor

5. Feel for the artery and inflate the cuff 20 - 30 mm Hg above the estimated systolic blood pressure until the pulse disappears.
6. Gently place the stethoscope on the cubital fossa below the cuff.
7. Deflate the cuff at a speed of 2 - 3 mm/sec, record the blood pressure both when the sound first appears (systolic blood pressure) and when it is lost (diastolic blood pressure). Round off to the nearest 2 mmHg.
8. If systolic blood pressure is greater than or equal to 90 mmHg, explain to the participant / patient that their blood pressure is high and they need to be rechecked after a five minute rest. Advise them to be relaxed and take a seat in the waiting areas until they are called again.

Write down the time that they will take the second measurement (after they have taken a five - minute rest).

The use of Digital Blood Pressure Monitors

5. Confirm that the cuff is set in an appropriate position.
6. Press the start button.
7. Wait until the value of blood pressure appears on the screen.
8. If systolic blood pressure is greater than or equal to 140 mmHg ,or diastolic blood pressure is greater than or equal to 90 mmHg, explain to the participant that their blood pressure is high and they need to be rechecked. Advise them to be relaxed and take a seat for five minutes in the waiting area until they are called again.

Write down the time that they will take the second measurement (after they have taken a five - minute rest).

The use of an aneroid manometer

Aneroid manometers need to be calibrated more often and correctly. Procedure to use an aneroid manometer is same as mercury blood pressure monitor When you look at the dial, make sure it is at the zero baseline before starting. If it isn't, you need to calibrate it using a mercury manometer. Connect it with a Y connector, and once you move the dial over, check the pressure at several readings on both meters to make sure the aneroid manometer matches the mercury manometer.

Note:

In case the blood pressure is too high to measure with a normal digital monitor, use a mercury blood pressure monitor or use the following procedure.

1. Place the cuff on the arm.
2. Press and hold the start button to display the last measured data.
3. Press and hold the start button again until a number appears; the number should be 30 to 40 mmHg higher than the expected systolic pressure.
4. Release the start button to measure. Then, continue measurement using the normal procedure.

Points to note:

Errors in the measurement of blood pressure can occur for several reasons:

- Defective equipment
- Using an inappropriate sized cuff
- When the cuff and heart are not at the same level

Mercury Blood Pressure Monitor

- When the mercury column reading is not at " 0 "mm Hg at rest
- Deflating the cuff too quickly
- Misreading of the mercury level (your eye should be at the same level as the top of the mercury column)
- Poor technique (for example: failure to record when the sound disappears)
- Tendency to round up to nearest 5 or 10 mmHg

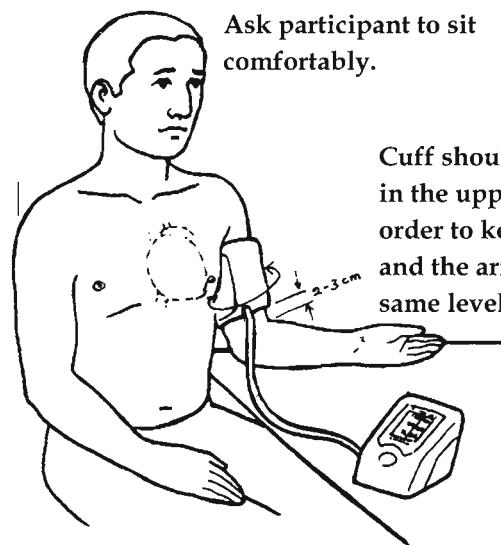
Observation bias (for example: considering the value of blood pressure among the young to be normal)

Digital Blood Pressure Monitor

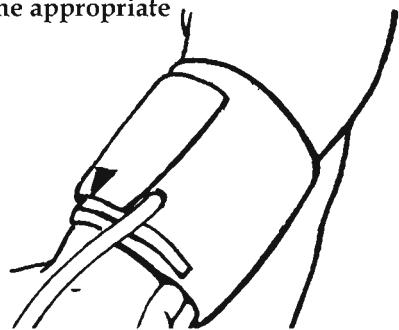
- The measurement of each mercury sphygmomanometer may vary. When the difference is more than 10 mm Hg, the device should be repaired.
- It is advisable to check the digital BP monitor against a mercury sphygmomanometer or another device occasionally.
- It is important to calibrate a device according to the manufacturer's instruction.
- It is generally recommended to have each device inspected every two years to maintain proper function and accuracy.

Questions about Lifestyle and Measurement of Blood Pressure

First ask the questions about lifestyle. This gives the participant some time to reset before taking the blood pressure measurement.



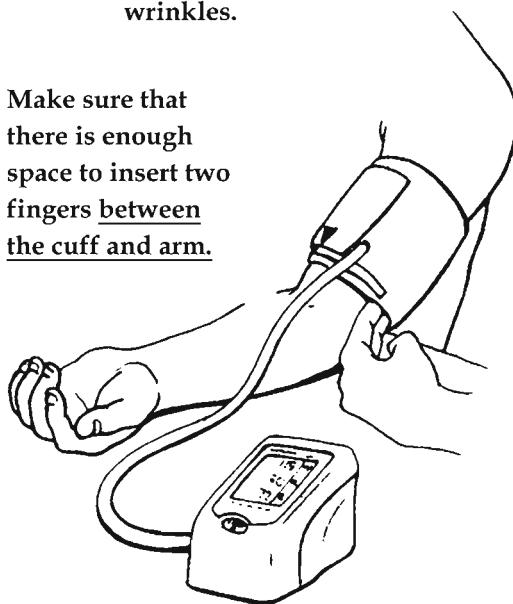
Check whether the indicator of the cuff is in the appropriate range.



Make sure that cellular phones, PCs or other electrical devices are not left nearby.



Make sure that there is enough space to insert two fingers between the cuff and arm.



If blood pressure is $\geq 140/90$ mmHg advise participant to have it rechecked after a ten-minute rest.

Annex (26) Body Mass Index (BMI) Chart for Adults

Body Mass Index (BMI) Chart for Adults

HEIGHT in feet/inches and centimeters

WEIGHT	4'8"	4'9"	4'10"	4'11"	5'0"	5'1"	5'2"	5'3"	5'4"	5'5"	5'6"	5'7"	5'8"	5'9"	5'10"	5'11"	6'0"	6'1"	6'2"	6'3"	6'4"	6'5"
lbs (kg)	142cm	147	150	152	155	157	160	163	165	168	170	173	175	178	180	183	185	188	191	193	196	
260 (117.9)	58	56	54	53	51	49	48	46	45	43	42	41	40	38	37	36	35	34	33	32	32	31
255 (115.7)	57	55	53	51	50	48	47	45	44	42	41	40	39	38	37	36	35	34	33	32	31	30
250 (113.4)	56	54	52	50	49	47	46	44	43	42	40	39	38	37	36	35	34	33	32	31	30	30
245 (111.1)	55	53	51	49	48	46	45	43	42	41	40	38	37	36	35	34	33	32	31	31	30	29
240 (108.9)	54	52	50	48	47	45	44	43	41	40	39	38	36	35	34	33	33	32	31	30	29	28
235 (106.6)	53	51	49	47	46	44	43	42	40	39	38	37	36	35	34	33	32	31	30	29	29	28
230 (104.3)	52	50	48	46	45	43	42	41	39	38	37	36	35	34	33	32	31	30	30	29	28	27
225 (102.1)	50	49	47	45	44	43	41	40	39	37	36	35	34	33	32	31	31	30	29	28	27	27
220 (99.8)	49	48	46	44	43	42	40	39	38	37	36	34	33	32	32	31	30	29	28	27	27	26
215 (97.5)	48	47	45	43	42	41	39	38	37	36	35	34	33	32	31	30	29	28	28	27	26	25
210 (95.3)	47	45	44	42	41	40	38	37	36	35	34	33	32	31	30	29	28	28	27	26	26	25
205 (93.0)	46	44	43	41	40	39	37	36	35	34	33	32	31	30	29	29	28	27	26	26	25	24
200 (90.7)	45	43	42	40	39	38	37	35	34	33	32	31	30	30	29	28	27	26	26	25	24	24
195 (88.5)	44	42	41	39	38	37	36	35	33	32	31	31	30	29	28	27	26	26	25	24	24	23
190 (86.2)	43	41	40	38	37	36	35	34	33	32	31	30	29	28	27	26	26	25	24	24	23	23
185 (83.9)	41	40	39	37	36	35	34	33	32	31	30	29	28	27	27	26	25	24	24	23	23	22
180 (81.6)	40	39	38	36	35	34	33	32	31	30	29	28	27	27	26	25	24	24	23	22	22	21
175 (79.4)	39	38	37	35	34	33	32	31	30	29	28	27	27	26	25	24	24	23	22	22	21	21
170 (77.1)	38	37	36	34	33	32	31	30	29	28	27	27	26	25	24	24	23	22	22	21	21	20
165 (74.8)	37	36	34	33	32	31	30	29	28	27	27	26	25	24	24	23	22	22	21	21	20	20
160 (72.6)	36	35	33	32	31	30	29	28	27	27	26	25	24	24	23	22	22	21	21	20	19	19
155 (70.3)	35	34	32	31	30	29	28	27	27	26	25	24	24	23	22	22	21	20	20	19	19	18
150 (68.0)	34	32	31	30	29	28	27	27	26	25	24	23	23	22	22	21	20	20	19	19	18	18
145 (65.8)	33	31	30	29	28	27	27	26	25	24	23	23	22	21	21	20	20	19	19	18	18	17
140 (63.5)	31	30	29	28	27	26	26	25	24	23	23	22	21	21	20	20	19	18	18	17	17	17
135 (61.2)	30	29	28	27	26	26	25	24	23	22	22	21	21	20	19	19	18	18	17	17	16	16
130 (59.0)	29	28	27	26	25	25	24	23	22	22	21	20	20	19	19	18	18	17	17	16	16	15
125 (56.7)	28	27	26	25	24	24	23	22	21	21	20	20	19	18	18	17	17	16	16	16	15	15
120 (54.4)	27	26	25	24	23	23	22	21	21	20	19	19	18	18	17	17	16	16	15	15	15	14
115 (52.2)	26	25	24	23	22	22	21	20	20	19	19	18	17	17	16	16	15	15	14	14	14	14
110 (49.9)	25	24	23	22	21	21	20	19	19	18	18	17	17	16	16	15	15	15	14	14	13	13
105 (47.6)	24	23	22	21	21	20	19	19	18	17	17	16	16	15	15	14	14	13	13	13	12	12
100 (45.4)	22	22	21	20	20	19	18	18	17	17	16	16	15	15	14	14	14	13	13	12	12	12
95 (43.1)	21	21	20	19	19	18	17	17	16	16	15	15	14	14	14	13	13	13	12	12	12	11
90 (40.8)	20	19	19	18	18	17	16	16	15	15	15	14	14	14	13	13	13	12	12	11	11	11
85 (38.6)	19	18	18	17	17	16	16	15	15	14	14	13	13	13	12	12	12	11	11	10	10	10
80 (36.3)	18	17	17	16	16	15	15	14	14	13	13	13	12	12	11	11	11	10	10	10	9	

Note : BMI values rounded to the nearest whole number. BMI categories based on CDC (Centers for Disease Control and Prevention) criteria.

BMI = Weight [kg]/(Height [m] x Height [m]) = 703 x Weight [lb]/(height [in] x Height [in])
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Annex (27) Measurement of Height, Weight, Waist Circumference and Calculation of BMI

1. Materials and equipment required

Type	Item
Equipment	Stadiometer or Measurement Tape Weighing scale Extra battery for Digital Scale
Documents/Stationary	BMI Chart Ruler Calculator PENS
Furniture	Stool Table

2. Preparation

2.1. Height

For the first time

1. Select a wall for the stadiometer / Measurement tape. A flat and smooth wall is suitable.
2. Place the stadiometer on the floor.
3. Put up the tape until "0" the red line, keep the position and the stadiometer / Measurement tape on the wall with a screw. Don't remove the stadiometer / Measurement tape at the end of every screening in order to minimize the damage to the wall.
4. Draw a line on the floor underneath the fixed stadiometer / measurement tape so that participant can keep their on either side of the line correctly.
5. Check your height to treat the set up.

For the second time

Measure your height to check the accuracy of the installation position of the stadiometer/ Measurement tape.

2.2 Weight

1. Check whether the weighting scale properly works. BMI on each personal medical record.

3. Procedure

3.1 Measurement of Height

1. Call each participant in order of reception number cards.
2. Ask the participant to take off their shoes.
3. Raise the headpiece of stadiometer / measurement tape to a point above the participant's height.
4. Ask the participant to stand with their feet on either side of the line that has been drawn on the floor.
5. Ask the participant to straighten their legs.
6. Check whether the back of head, buttocks, the calves and the heels are touching the wall.
7. Ask the participant to keep their head straight and look forward.
8. Bring the top head of the stadiometer down until it touches the top of participant's head.
9. Make sure the headpiece is set at right angle and touches the wall.
10. Read the measurement at eye level and record it in centimeters. Round off the measured height to the closest whole number.

3.1.1 Measure of Height with Tape

- 1. Remove all shoes and socks
- 2. Stand on a flat floor with no carpeting next to a wall.
- 3. Stand with your back to the wall, with your feet together and heels touching the wall.
- 4. Look straight ahead and keep your shoulders level.
- 5. Get somebody to place a flat object onto your head, such as a book or ruler, forming a 90 degree angle with the wall. Ask the person to mark the wall where the flat object touches it with a pencil.
- 6. Move away from the wall and measure the space from the floor to the marked place with a tape measure. This part is important, making sure that you have a high quality tape measure is vital.

Note

If a participant is taller than the health care staff, it can be difficult to measure at eye level. Use a stool so that you can measure the person accurately.

11. Write down the rounded height on the personal medical record.

4.1 Measurement of Weight

1. Stand in front of scale.
2. Ask the participant to take off their shoes and remove all items from their pockets.
3. Press the centre of the scale with your foot and wait until "00" appears on the screen.
4. Ask the participant to step on the scale and stand in the centre.
5. If the outfit of the participant covers the screen, ask them to pull it away.
6. Round off the measured weight to the nearest whole number.
(eg. 45.3 Kg → 45Kg , 67.8Kg → 68Kg)

4.2 Measurement of Waist Circumference

How to Measure Waist Circumference

Accurate measurement of waist circumference is achieved using the following technique:

- Remove or raise clothing. Remove your shirt / clothing or to raise to just below your chest / breast.
- Locate the top of the hip bone (iliac crest) and take the measurement just above this bony landmark, just where one finger can fit between the iliac crest and the lowest rib.
- Ensure that the tape measure is positioned horizontally, parallel to the floor.
- Measuring at a level just above the iliac crest, and positioning the tape horizontally, irrespective of whether the umbilicus is above or below the tape, provides the correct waist circumference measurement and should correspond to the maximal abdominal diameter.
- Ensure that the patient is standing erect and has relaxed the abdominal muscles. Measurement is taken at the end of normal expiration.
- Aim to have a snug but not too tight a fit of the tape measure around your waist; do not make compressions in the skin with the tape measure.
- To record the results measured as cm (centimetre).

4.3 Calculation of BMI

1. Check the height of each participant and choose a relevant BMI chart.
2. Find the weight of participant and put a ruler on the row.
3. Check the number in the cell where the height and weight cross.
4. If the participant's height or/ and weight are not available on any of BMI charts, use the following formula to calculate their BMI.

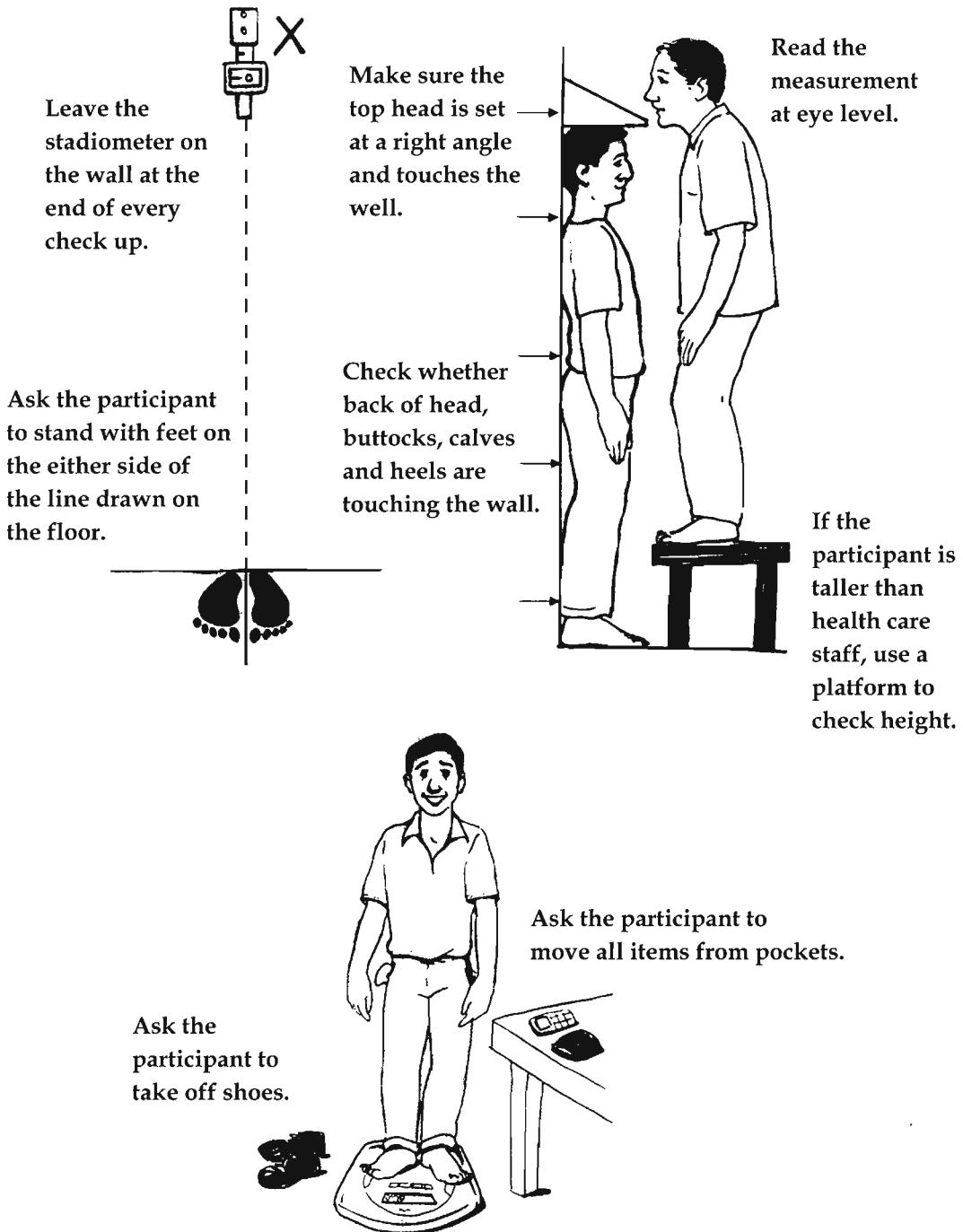
$$\text{BMI} = \text{Weight (Kg)}$$

$$\text{Height (m)} \times \text{Height (m)}$$

$$\text{Example : weight} = 42 \text{ kg} , \text{ Height} = 142 \text{ cm} \rightarrow \frac{42}{1.42 \times 1.42} = 20,8 \text{ kgm}^2$$

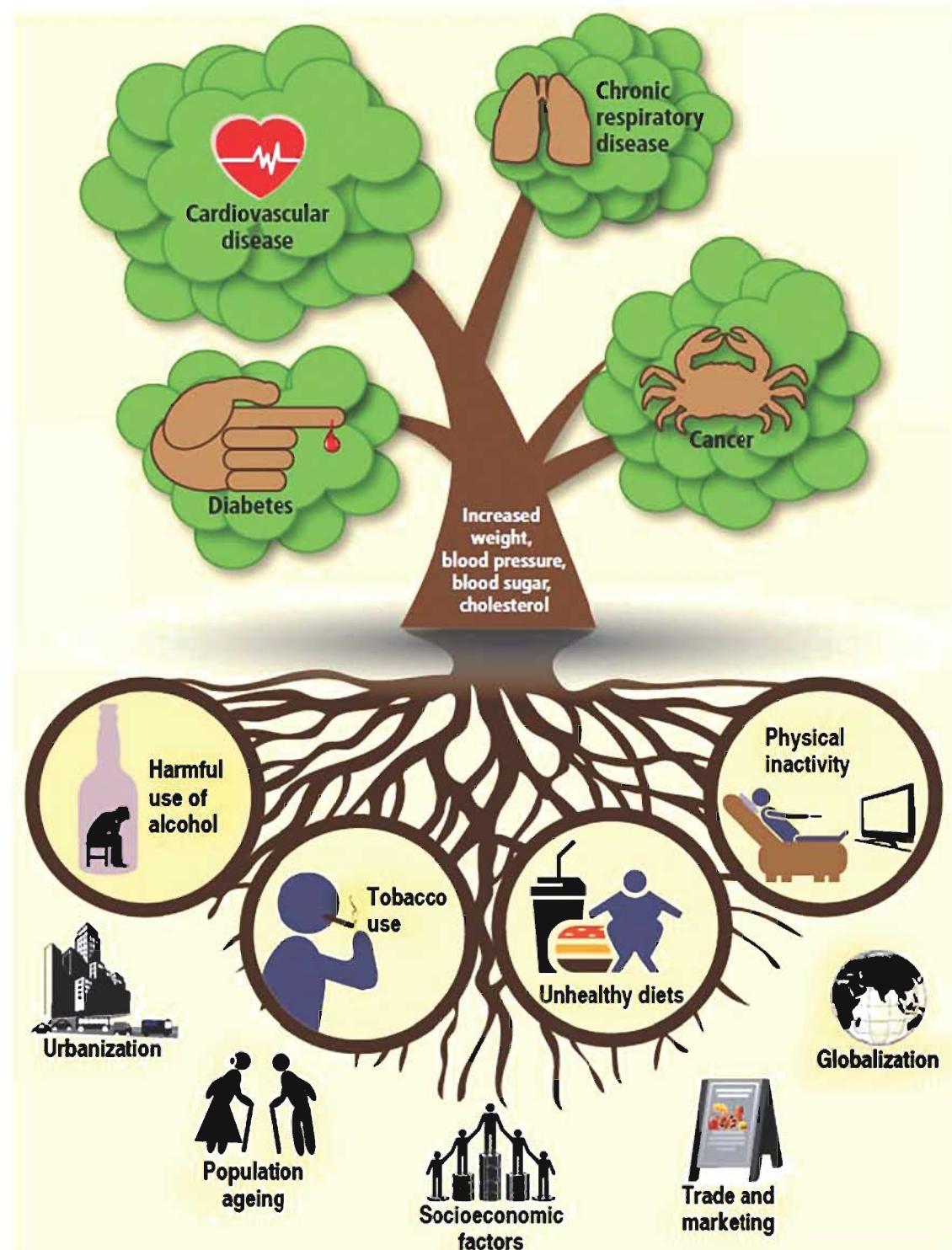
5. Write the BMI in the correct column on the participant's personal medical record.
6. Tell the participant to move on to the next station.

Measurement of Height, Weight and Calculation of BMI



Annex (28) IEC Materials

1.1 Diagram showing Major Non-communicable Diseases and Risk Factors



IEC 1. 2. Non - communicable Diseases Prevention and Control Program (Best Buys)

Tobacco use

- ✓ Raise taxes on tobacco.
- ✓ Protect people from tobacco smoke by implementing smoke-free policies.
- ✓ Warn people about the dangers of tobacco use.
- ✓ Enforce bans on tobacco advertising, promotion and sponsorship.



Harmful use of alcohol

- ✓ Raise taxes on alcohol.
- ✓ Restrict access to retailed alcohol.
- ✓ Enforce bans on alcohol advertising.



Unhealthy diet and physical inactivity

- ✓ Reduce salt intake.
- ✓ Replace trans-fats with polyunsaturated fats.
- ✓ Promote public awareness about diet and physical activity through the mass media.



Cardiovascular disease (CVD) and diabetes

- ✓ Provide counselling and multidrug therapy (including blood sugar control for diabetes mellitus) for people with medium–high risk of developing heart attack and stroke (including those who have established CVD).
- ✓ Treat heart attacks (myocardial infarction) with aspirin.

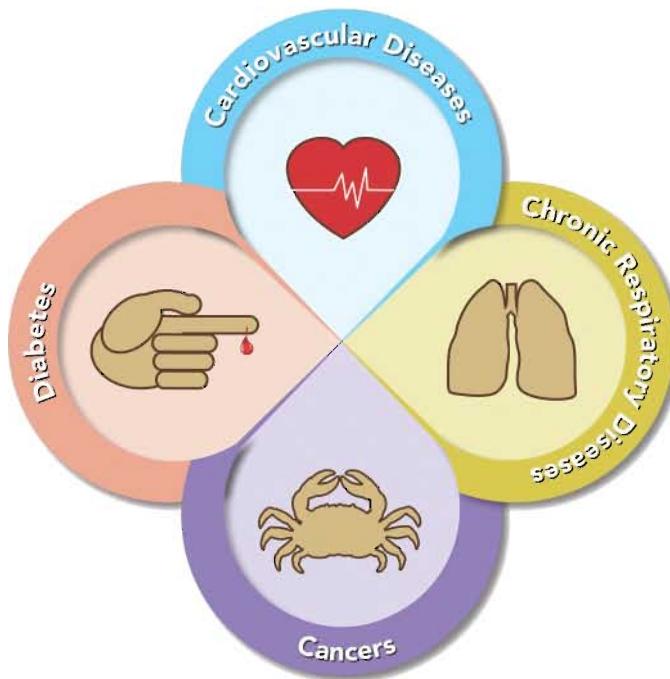


Cancer

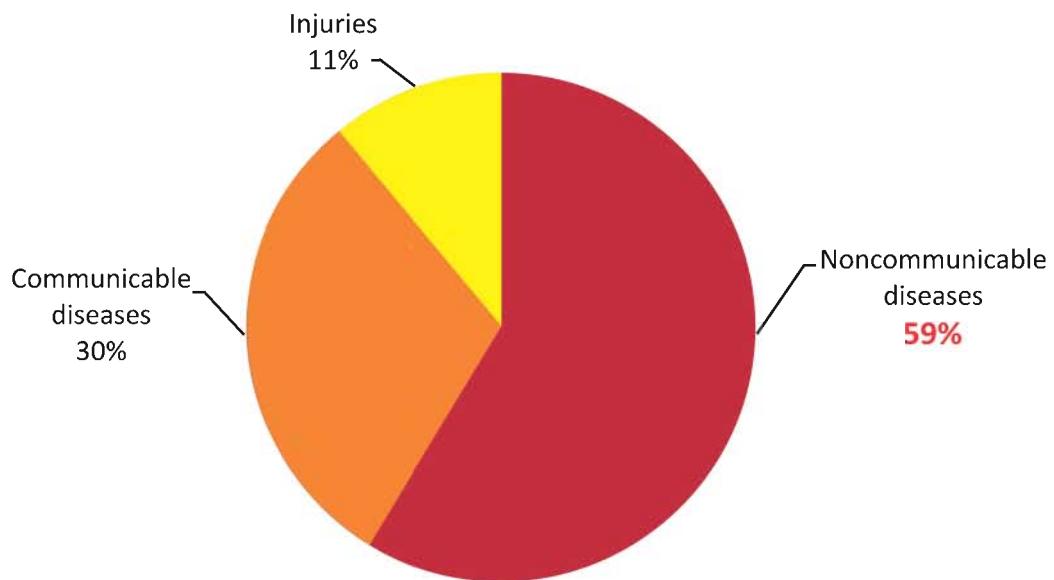
- ✓ Provide immunization for Hepatitis B beginning at birth to prevent liver cancer.
- ✓ Screen and treat pre-cancerous lesions to prevent cervical cancer.



IEC 1. 3. Together We can Prevent and Control the World's Most Common Diseases

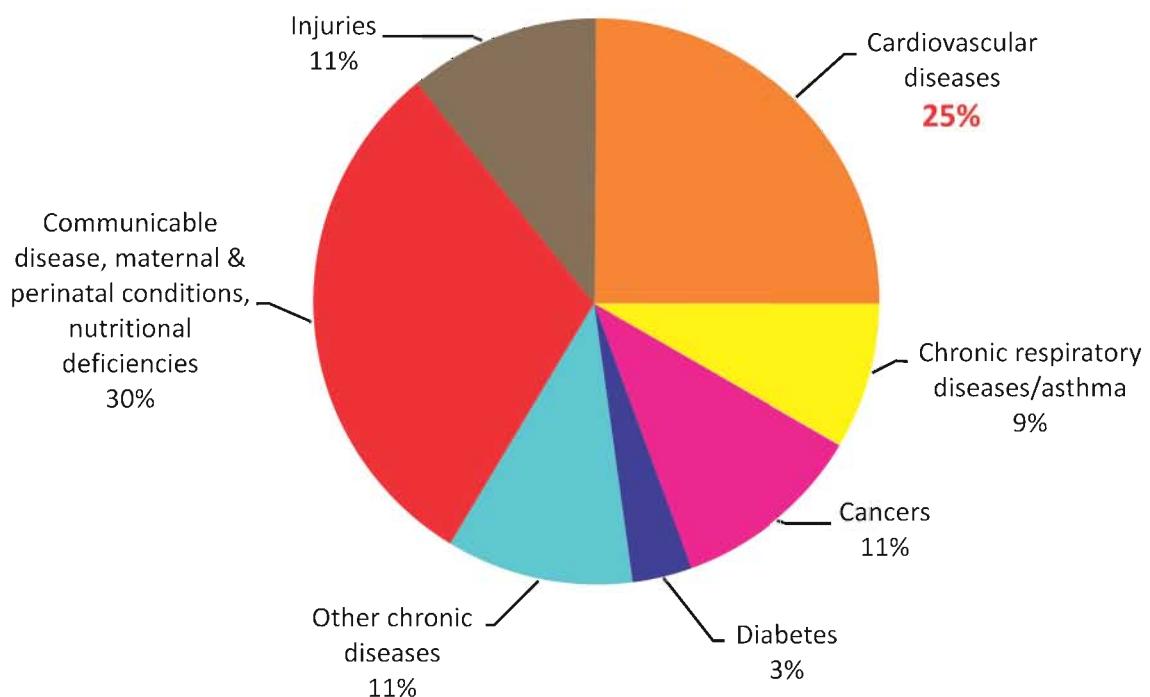


IEC 1. 4. Estimated percentage of deaths by cause, Myanmar 2012



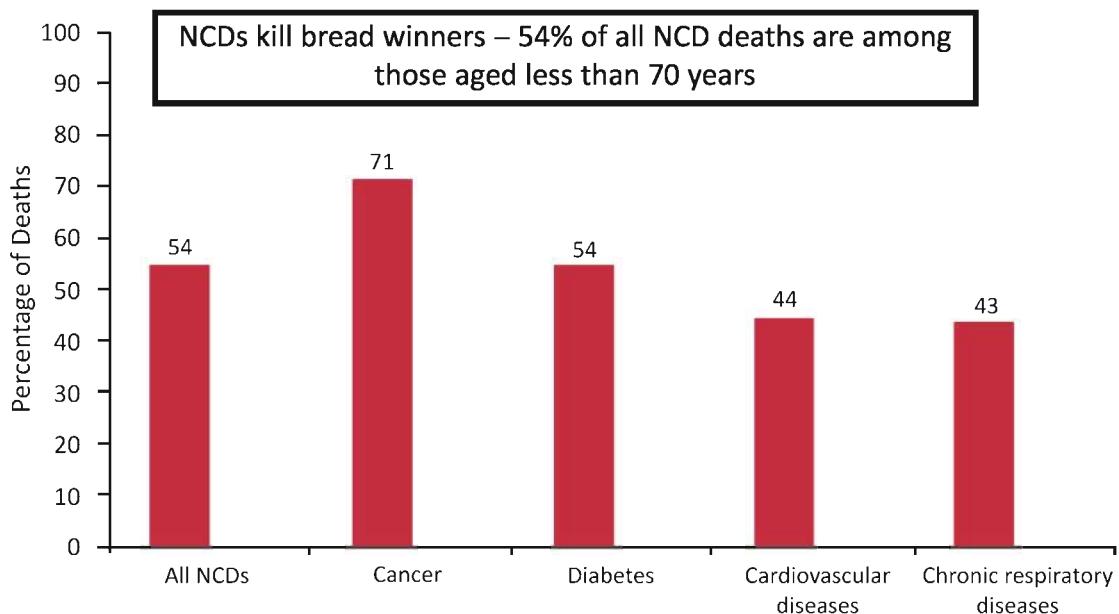
6 out of 10 deaths due to NCDs

IEC 1.5 Estimated percentage of deaths by cause, Myanmar, 2012



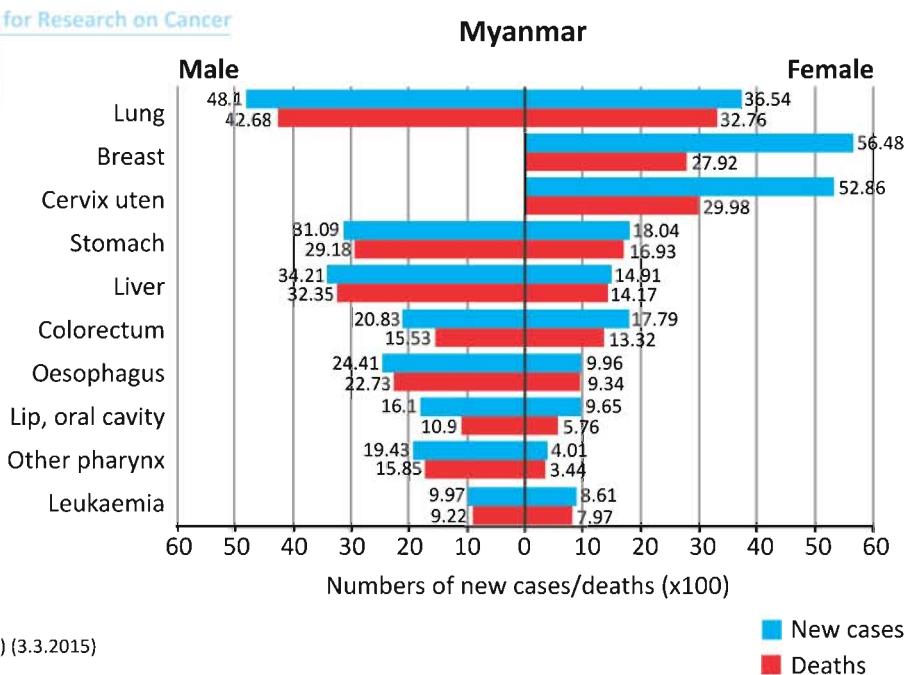
Cardiovascular diseases account for one-fourth of all deaths

IEC 1.6 Percentage of NCD deaths in persons < 70 years by type of NCD, Myanmar, 2012



IEC 1.7 Estimated incidence and mortality of top 10 cancers, by sex, Myanmar, 2012

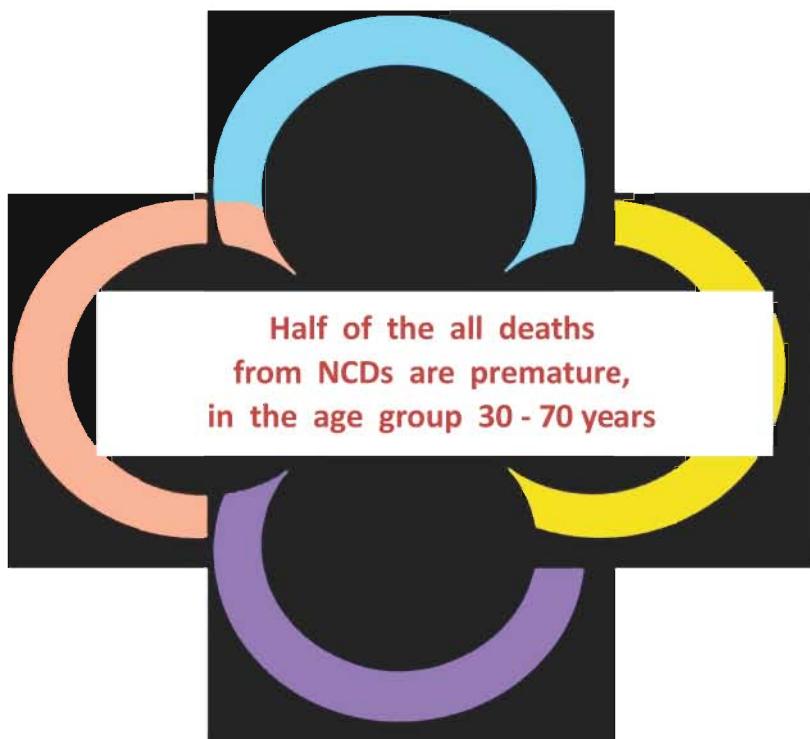
International Agency for Research on Cancer



GLOBOCAN 2012 (IARC) (3.3.2015)

Top 3 cancer sites: Breast, cervix and lung in women Lung, liver and stomach in males

IEC 1.8 Why we cannot ignore non-communicable diseases



IEC 1.9

Box 1 Voluntary global targets for prevention and control of noncommunicable diseases to be attained by 2025

	(1) A 25% relative reduction in the overall mortality from cardiovascular diseases, cancer, diabetes, or chronic respiratory diseases
	(2) At least 10% relative reduction in the harmful use of alcohol, as appropriate, within the national context
	(3) A 10% relative reduction in prevalence of insufficient physical activity
	(4) A 30% relative reduction in mean population intake of salt / sodium
	(5) A 30% relative reduction in prevalence of current tobacco use
	(6) A 25% relative reduction in the prevalence of raised blood pressure or contain the prevalence of raised blood pressure, according to national circumstances
	(7) Halt the rise in diabetes and obesity
	(8) At least 50% of eligible people receive drug therapy and counselling (including glycaemic control) to prevent heart attacks and strokes
	(9) An 80% availability of the affordable basic technologies and essential medicines, including generics, required to treat major noncommunicable diseases in both public and private facilities

Annex (29) Various types of Blood Pressure Apparatus

Sphygmomanometer (MERCURY)



How to measure Blood Pressure

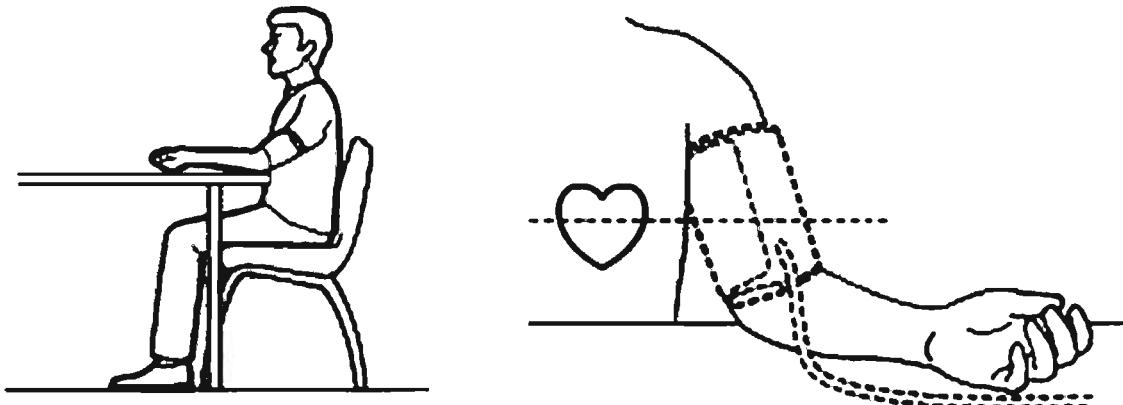
Blood Pressure Ranges				
	Low	Normal	Borderline	High
Systolic	Below 90 mmHg	Below 120 mmHg	120 to 139 mmHg	140 mmHg or higher, over 135 mmHg if you have diabetes
Diastolic	Below 60 mmHg	Below 80 mmHg	80 to 89 mmHg	90 mmHg or higher, over 85 mmHg if you have diabetes

Various types of Blood Pressure Monitors





Suitable level for Blood pressure Measurement is sitting position



Common problems that account for inaccurate blood pressure measurement

<i>When the patient has ...</i>	<i>BP can appear higher by¹²</i>
A full bladder	10 - 15 mmHg
An unsupported back	5 - 10 mmHg
Unsupported feet	5 - 10 mmHg
Crossed legs	2 - 8 mmHg
Cuff over clothing	10 - 40 mmHg
Unsupported arm	10 mmHg
A conversation or is talking	10 - 15 mmHg



Annex (30) How to take Blood Sample for Testing Blood Glucose Level



Annex (31) NCDs Glossary

DALY	The disability-adjusted life year (DALY) is a measure of overall disease burden, expressed as the number of potential productive years lost due to premature ill-health, disability or early death
Overweight	Overweight is defined as $\text{BMI} \geq 25 \text{ kg} / \text{m}^2$
Obesity	Obesity is defined as body mass index $\text{BMI} \geq 30 \text{ kg} / \text{m}^2$
BMI	Body Mass Index (BMI), a measure of weight relative to height
High Blood Pressure	Raised blood pressure is defined as systolic blood pressure of $\geq 140 \text{ mmHg}$ and/or diastolic blood pressure of $\geq 90 \text{ mmHg}$, or using medication to lower blood pressure
High Cholesterol	Raised cholesterol was defined, in these estimates, as 5.0 mmol/L or $190 \text{ mg} / \text{dl}$ or higher
Diabetes	Diabetes is defined as having a fasting plasma glucose value $\geq 7.0 \text{ mmol/L}$ (126 mg/dl) or being on medication for raised blood glucose
Insufficient physical activity	Insufficient physical activity is defined as less than five times 30 minutes of moderate activity per week, or less than three times 20 minutes of vigorous activity per week, or equivalent
Best buy	A best buy is an intervention that is not only highly cost-effective but also cheap, feasible and culturally acceptable to implement. Good buys are other interventions that may cost more or generate less health gain but still provide good value for money. A highly cost-effective intervention is one that, on average, provides an extra year of healthy life (equivalent to averting one DALY) for less than the average annual income per person.
Advocacy	Advocacy is the effort to influence people, primarily decision-makers, to create change, which in the context of cancer control results in comprehensive policies and effective program implementation, through various forms of persuasive communication

Social Mobilization	Social mobilization is a broad-scale movement that brings together all feasible and practical intersectoral social allies. Its main purpose is to raise people's awareness of, and demand for, non-communicable disease prevention and control, to assist in the delivery of resources and services, and to strengthen community participation for sustainability and self-reliance.
Counseling	Counseling advice and support that is given to people to help them deal with problems, make important decisions, etc.
Transient Ischaemic Attack	The result of temporary disruption of circulation to brain due to embolism, thrombosis to brain arteries, or spasm of vessel walls
Premature CVD or Heart Disease	Premature cardiovascular disease was defined as a cardiovascular event occurring before the age of 51 years in men and 56 years in women, consistent with the literature on identifying a genetic predisposition.
Point of care devices	Point of-care diagnostics are medical tools or devices that can diagnose disease in a patient's community, generally outside of a formal clinic setting.

Annex (32) Instruction for usage of PEN TOT Manual for MO (Refer to pretest results when using this annex)

Topics	TMO/MO at hospital	TPHO	Basic Health Staff
<ul style="list-style-type: none"> • Introduction • What is NCD? • Risk factors and determinants of NCDS • Burden of NCDs in worlds / Myanmar • PEN intervention (Brief) 	<ul style="list-style-type: none"> • What is NCD? • Risk factors and determinants of NCDS • Burden of NCDs in worlds / Myanmar • PEN intervention (Brief) 	<ul style="list-style-type: none"> • What is NCD? • Risk factors and determinants of NCDS • Burden of NCDs in worlds / Myanmar • PEN intervention (Brief) 	<ul style="list-style-type: none"> • What is NCD? • Risk factors and determinants of NCDS • Burden of NCDs in Myanmar • PEN intervention in Myanmar (Short brief)
<ul style="list-style-type: none"> • Annex 8 WHO PEN protocol 1 and 2 • Annex 10 Advise patients and families 	<ul style="list-style-type: none"> • Mainly emphasis on opportunistic screening in hospitals / mobile clinics and RHC / Sub-RHC by using WHO / ISH risk prediction chart with action 3 • Then refer patients by using action 4 • Counseling all and treat as action 5 • Advise patient and Family and especially to advise specifically for diabetes 	<ul style="list-style-type: none"> • Mainly emphasis on opportunistic screening in hospitals /mobile clinics and RHC / Sub-RHC by using WHO / ISH risk prediction chart with action 3 • Then refer patients by using action 4 • Counseling all and treat as action 5 • Advise patient and Family and especially to advise specifically for diabetes 	<ul style="list-style-type: none"> • Detailed demonstration and discussion by using BHS manual
<ul style="list-style-type: none"> • Annex 11 PEN protocol 2 	<ul style="list-style-type: none"> • To take regular exercise - distribution of IEC materials (WHO docket), information sharing 	<ul style="list-style-type: none"> • To take regular exercise - distribution of IEC materials (WHO docket), information sharing 	<ul style="list-style-type: none"> • Detailed demonstration and discussion by using manual for BHS in Myanmar language.

<ul style="list-style-type: none"> • Health Education <ol style="list-style-type: none"> 1. Physical exercise 2. Healthy diet • Annex 12 Counseling on cessation of Tobacco • Annex 13 Adherence to treatment 	<ul style="list-style-type: none"> • To avoid or reduce salty food , to take more fruit and vegetable • To reduce fatty meal and to take fish • To reinforce the alcohol abstinence and to advise reduction of alcohol intake and avoid in some circumstances • Counseling on cessation of tobacco use by using 5A approach. • To give proper information to get adherence to treatment 	<ul style="list-style-type: none"> • To avoid or reduce salty food ,to take more fruit and vegetable • To reduce fatty meal and to take fish • To reinforce the alcohol abstinence and to advise reduction of alcohol intake and avoid in some circumstances • Counseling on cessation of tobacco use by using 5A approach. • To give proper information to get adherence to treatment 	
<ul style="list-style-type: none"> • PEN protocol 3 Annex 14, Annex 14.1 Diagnosis of Asthma and COPD 	<ul style="list-style-type: none"> • To differentiate between these 2 by sign and symptom/Measure Peak Expiratory Flow Rate (PEFR) and give 2 puffs of salbutamol • Remeasure in 15 mins (PEFR > 20% → asthma < 20 % → COPD) 	<ul style="list-style-type: none"> • To differentiate between these 2 by sign and symptom/Measure Peak Expiratory Flow Rate (PEFR) and give 2 puffs of salbutamol • Remeasure in 15 mins (PEFR > 20% → asthma < 20 % → COPD) 	<ul style="list-style-type: none"> • Detailed demonstration and discussion mainly using salbutamol spacer.
<ul style="list-style-type: none"> • Annex 14.2 Management of Asthma 	<ul style="list-style-type: none"> • To asses that Asthma is uncontrolled or well controlled. If it is uncontrolled, to carry out annex 14.2 up to step 3 by TMO, MO and basic health staff. If asthma is still not controlled, refer to specialist. 	<ul style="list-style-type: none"> • To asses that Asthma is well controlled or uncontrolled. If it is not controlled, to carry out annex 14.2 up to step 3 by TMO, MO basic health staff. If asthma is still not controlled, refer to specialist 	

<ul style="list-style-type: none"> Annex 14.3 Management of exacerbation of asthma 	<ul style="list-style-type: none"> To treat Asthma as shown in 3.1 At step 4 Refer to specialist Refer patient if it is indicated Advice to patient and family Treated by TMO/ MO, consultant only 	<ul style="list-style-type: none"> To treat Asthma as shown in 3.1 At step 4 Refer to specialist Refer patient if it is indicated Advice to patient and family Treated by TMO/ MO, consultant only 	
<ul style="list-style-type: none"> Annex 14.4 Management of COPD 	<ul style="list-style-type: none"> Assess/treat/advice by using protocol 3.2 Treated by TMO/ MO, consultant only 	<ul style="list-style-type: none"> Assess/treat/advice by using protocol 3.2 Treated by TMO/ MO, consultant only 	
<ul style="list-style-type: none"> Annex 14.5 Management of Exacerbation of COPD 	<ul style="list-style-type: none"> Assess/treat/advice by using protocol 3.2 Treated by TMO/ MO, consultant only 	<ul style="list-style-type: none"> Assess/treat/advice by using protocol 3.2 Treated by TMO/ MO, consultant only 	
<ul style="list-style-type: none"> Annex 15.1 PEN protocol 4 Assessment and referral of suspect Breast cancer 	<ul style="list-style-type: none"> To assess women < 30 or > 30 years To assess 3 cardinal signs and symptoms (a), (b), (c) To enhance breast self-examination and clinical examination of breast To develop proper referral system 	<ul style="list-style-type: none"> To assess women < 30 or > 30 years To assess 3 cardinal signs and symptoms (a), (b), (c) To enhance breast self-examination and clinical examination of breast To develop proper referral system 	<ul style="list-style-type: none"> Detailed demonstration and discussion
<ul style="list-style-type: none"> Annex 15.2 Assessment and referral of women with suspected carcinoma of cervix 	<ul style="list-style-type: none"> To assess women < 30 or > 30 years To assess 4 cardinal signs and symptoms (a), (b), (c) and (d) Speculum examination required 	<ul style="list-style-type: none"> To assess women < 30 or > 30 years To assess 4 cardinal signs and symptoms (a), (b), (c) and (d) Speculum examination required 	<ul style="list-style-type: none"> Detailed demonstration and discussion

	<ul style="list-style-type: none"> • To provide referral system 		
<ul style="list-style-type: none"> • Annex 15.3 Facts about oral cancer 	<ul style="list-style-type: none"> • Causes, symptom, indications • For referral 	<ul style="list-style-type: none"> • Causes, symptom, indications • For referral 	<ul style="list-style-type: none"> • Discussion
<ul style="list-style-type: none"> • Annex 1 Rapid assessment of Township health system/ Hospital and NCDs health situation 	<ul style="list-style-type: none"> • Clearly understand and take accountability for treatment care at hospital and outreach care 	<ul style="list-style-type: none"> • Mainly responsible for TPHO for assessment and NCDs health situation 	<ul style="list-style-type: none"> • Supportive activities done by THA, HA
<ul style="list-style-type: none"> • Annex 16 Clinical Record for NCDs Patient 	<ul style="list-style-type: none"> • How to use and what is salient facts in record 	<ul style="list-style-type: none"> • How to use and what is salient facts in record 	<ul style="list-style-type: none"> • How to use and what is salient facts in record
<ul style="list-style-type: none"> • Annex 17 Referral Form 	<ul style="list-style-type: none"> • To emphasis on usage of referral form 	<ul style="list-style-type: none"> • To emphasis on usage of referral form 	<ul style="list-style-type: none"> • To emphasis on usage of referral form
<ul style="list-style-type: none"> • Annex 9 Diabetes / hyper-tension 	<ul style="list-style-type: none"> • For patient with hypertension only • For patient for Diabetes and hypertension 	<ul style="list-style-type: none"> • For patient with hypertension only • For patient for Diabetes and hypertension 	<ul style="list-style-type: none"> • For patient with hypertension only • For patient for Diabetes and hypertension
<ul style="list-style-type: none"> • Annex 2 Action plan for PEN expansion in respective township 	<ul style="list-style-type: none"> • This is not for hospital usage but TMO must accountable for this plan 	<ul style="list-style-type: none"> • Mainly responsible for TPHO 	<ul style="list-style-type: none"> • Clear understanding of RHC staff and participation in all stage of planning
<ul style="list-style-type: none"> • Annex 4 Training program of TOT for TMO/TPHO 	<ul style="list-style-type: none"> • Must be known by Trainers as well as trainees 	<ul style="list-style-type: none"> • Must be known by Trainers as well as trainees 	<ul style="list-style-type: none"> • Not for BHS
<ul style="list-style-type: none"> • Annex 3 Advocacy tools for NCDs 	<ul style="list-style-type: none"> • To advocate hospital committee and other staff 	<ul style="list-style-type: none"> • Mainly responsible for TPHO. To advocate Local authority, NGOs 	<ul style="list-style-type: none"> • To advocate local authority

• Annex 5, 6 Pretest and Posttest questions	• To assess the training outcome	• To test training outcome	• To test training outcome
• Annex 21 Monitoring and evaluation of program activities	• Mainly NCDs PEN activities at hospital and outreach areas.	• All of NCDs PEN activities in townships	• All of NCDs PEN activities in rural area concerned
• Annex 9 Diabetes mellitus diagnosis	• Must use this guideline for management of Diabetes and hypertension	• Must use this guideline for management of Diabetes and hypertension	• To train BHS by doing demonstration and group work
• Annex 28 IEC materials	• to use for Advocacy/Health Education/ Counseling	• To use for Advocacy/Health Education/ Counseling	• To use for Advocacy/Health Education/ Counseling
• Annex 19 Report Form (total)	• Monthly report used in District hospital	• Monthly report used in Township	• Monthly report used in RHC
• Annex 5 Training program for BHS	• Must be known by Trainers as well as trainees	• Must be known by Trainers as well as trainees	• For BHS must know
• Annex 31 NCDs Glossary	• Multipurpose use	• Multipurpose use	• Multipurpose use
• Annex 32 Instruction for usage of PEN TOT manual MO	• For MO and above	• For MO and above	• Can be used for BHS after exclusion some facts for MO and above
• Annex 25 How to use blood glucose meter	• For MO and above	• For MO and above	• For BHS, demonstration and group work
• Annex 26 How to measure blood pressure	• Not for MO and above	• Not for Mo and Above	• For BHS, demonstration and group work

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