



**MINISTRY OF HEALTH**

**UGANDA INTEGRATED GUIDELINES  
FOR THE MANAGEMENT OF  
NON-COMMUNICABLE DISEASE**

2019



## Foreword

Uganda, like other developing countries, is faced with a fast increasing burden of non-communicable diseases (NCDs). This is already an established public health problem that requires urgent attention to halt their progress. The NCD burden in Uganda is continuing to rise with the current statistics indicating that 33% of all deaths are due NCDs (diabetes, cardiovascular diseases, chronic respiratory diseases, cancers, and others). According to the World Health Organisation, it is estimated that cardiovascular diseases pose the highest burden (10%), followed by cancers (9%), chronic respiratory diseases (2%) and diabetes (2%). If not halted, quality of life and productivity of the population will be compromised.

The Ministry of Health has prioritised prevention of NCDs focusing on modifiable risk factors; harmful use of alcohol, tobacco use, unhealthy diets and physical inactivity. Efforts have also been geared toward early detection and treatment. To do this, the country needs; a mobilised and sensitised community, facilities equipped with diagnostic equipment, essential NCD medicines, as well as trained health workers at various levels of care.

Currently, Uganda faces various challenges in delivering NCD quality care such as limited diagnostic equipment and supplies, essential NCD medicines, weak reporting systems, few adequately trained health workers, and weak referral systems. The management of severely sick patients with NCDs is still a big challenge in regard to specialised care – equipment, personnel, medicines and referral.

The aim of these guidelines is to provide standard guidance to all health workers at their respective levels of care in management of NCDs. It is hoped that the use of these guidelines will consequently result in the early identification of patients with NCDs and their proper management to prevent and halt any complications and improved clinical outcomes. The guidelines also emphasise prevention: screening, early disease detection and prophylaxis.

The Ministry of Health profoundly acknowledges all stakeholders, partners and individuals who contributed towards the development of these guidelines. In particular, World Health Organisation, the IMAI-IMCI Alliance and Walimu for providing financial and technical support.

It is my sincere hope that you will find these guidelines very resourceful in your efforts to provide care among NCD patients. I therefore urge the NCD Department, all partners, health service managers and health workers to make good use of these guidelines.

Dr. Henry G. Mwebesa

**Ag. Director General Health Services**

## Preface and Acknowledgement

Produced by MOH Uganda with support from IMAI Alliance (as US NGO) under the direction of Drs. Sandy Gove and Mona Shah and Walimu (Ugandan NGO) under the direction of Dr. Nathan Kenya-Mugisha. Funding has been provided by the WHO AFRO Department of Noncommunicable Diseases. This work has been done in collaboration with the MOH Uganda NCD Department and WHO.

The Uganda Integrated Guidelines for Management of Non-Communicable Diseases have been adopted from the generic WHO IMAI-PEN Integrated NCD Chronic Care guideline module. These guidelines were updated to reflect Uganda country adaptations. The process of adaptation was participatory and consultative starting way back in December 2015 to August 2019. These guidelines were pre-tested in 2017 with further revision after the 2018 logistics trial in Masaka. They include HEARTS protocols and patient monitoring tools.

These guidelines have been aligned to Uganda Clinical Guidelines (UCG), Uganda Essential Medicines and Supplies List (EMHSLU) and the WHO Non-Communicable Diseases Kit (NCDK 2016).

This guide has been specifically designed to address:

- cardiovascular risk-based management of hypertension, diabetes and other risk factors to reduce strokes, heart attacks and hypertensive heart failure;
- management of asthma and COPD; and
- management of rheumatic heart disease.

These conditions share similar risk factors; harmful use of alcohol, tobacco use, unhealthy diets and physical inactivity. Other NCDs which do not share similar risk factors are not addressed by these guidelines. All health workers (in both public or private sectors) are urged to use these guidelines for proper management of NCDs in their health facilities.

The IMAI technical team included Drs. Kirsten McHarry and Tisha Mitsunaga. We gratefully acknowledge input by Drs. Ashwin Vasan and Simran Chaudhury from Columbia University Mailman School of Public Health and during field testing and adaptation by Dr. Nathan Kenya-Mugisha and staff from Walimu, Dr. Zziwa Buuka Godfrey, Dr. Charles Kasozi, Zikusooka Fredrick from Masaka Regional Referral Hospital, Dr. Agaba Gideon from the Mulago Diabetes Unit; Dr. Andrea Gershon (Respirologist, Sunnybrook Health Sciences Centre; Associate Professor, University of Toronto) and Drs. Bruce Kirenga and William Worodria, Rebecca Nantanda from the Mulago Lung Institute in Uganda; several Rheumatic Heart Disease (RHD) experts at the World Heart Federation and Dr. Emmy Okello and others in the Uganda Heart Institute.

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Editing and reference help from Sarah Gove and Katherine Bloomquist gratefully acknowledged.

## List of Acronyms/ Abbreviations

ACE	angiotensin-converting enzyme
ART	antiretroviral therapy
ARV	antiretroviral drugs
BMI	body mass index
BP	blood pressure
BPM	blood pressure monitoring
CHW	community health worker
CKD	chronic kidney disease
CO	clinical officer
COPD	chronic obstructive pulmonary disease
CVD	cardiovascular disease
DCM	district clinician manual
DDI	didanosine
DDX	differential diagnosis
DM	diabetes mellitus
ECG	electrocardiogram
ED	erectile dysfunction
EDD	estimated due date
EMHSLU	Essential Medicines and Health Supplies List for Uganda
FP	family planning
FBG	fasting blood glucose
GFR	glomerular filtration rate
GI	gastrointestinal
HEARTS	Healthy-lifestyle counselling, Evidence-based protocols, Access to essential medicines and technology, Risk-based CVD management, Team-based care, Systems for monitoring
HIV	human immunodeficiency virus
HTN/HT	hypertension
ICS	inhaled corticosteroid
IM	intramuscular
IMAI	Integrated Management of Adolescent and Adult illness
INH	isoniazid
ISH	International Society of Hypertension
IV	intravenous therapy
LABA	long-acting beta-agonist
LMP	last menstrual period
MDI	metered-dose inhaler
MI	myocardial infarction
MO	medical officer
MOH	Ministry of Health, Uganda
NCD	non-communicable disease
NCDK	non-communicable diseases kit
NGO	non-governmental organization
NRTI	nucleoside reverse transcriptase
NSAIDS	non-steroidal anti-inflammatory drugs
OHA	oral hypoglycaemic agents
PCN	penicillin
PCVD	prior cardiovascular disease

PEFR	peak expiratory flow rate
PEN	Package of Essential Noncommunicable disease interventions
PFM	peak flow meter
QC	Quick Check
RF	rheumatic fever
RHD	rheumatic heart disease
RPG	random blood glucose
SABA	short-acting beta-agonist
SBP	systolic blood pressure
TB	tuberculosis
TIA	transient ischemic attack
UCG	Uganda clinical guidelines
WC	waist circumference
WHO	World Health Organization

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# INTRODUCTION

Chronic conditions are a major cause of illness, disability and death globally. Conditions such as cardiovascular disease, hypertension, diabetes, asthma and chronic obstructive pulmonary disease (COPD) require a continuum of care over a period of time when the condition may improve, remain stable or deteriorate. This continuum requires repeated contact with the health system and tracking through the health system. Chronic care is different from acute care which uses medical care to cure or fix acute problems or injury. The goal of chronic care is to avoid complications, improve clinical outcomes and the quality of life for people with chronic diseases.

Cardiovascular diseases are a large and growing cause of premature mortality in low-resource countries such as Uganda and include a range of serious, acute and chronic conditions that affect the heart and blood vessels such as coronary heart disease, cardiomyopathies, valvular heart diseases, arrhythmias, congenital heart diseases, cerebrovascular, and peripheral vascular diseases. Much (but not all) of their prevention and care can be successfully implemented in primary care.

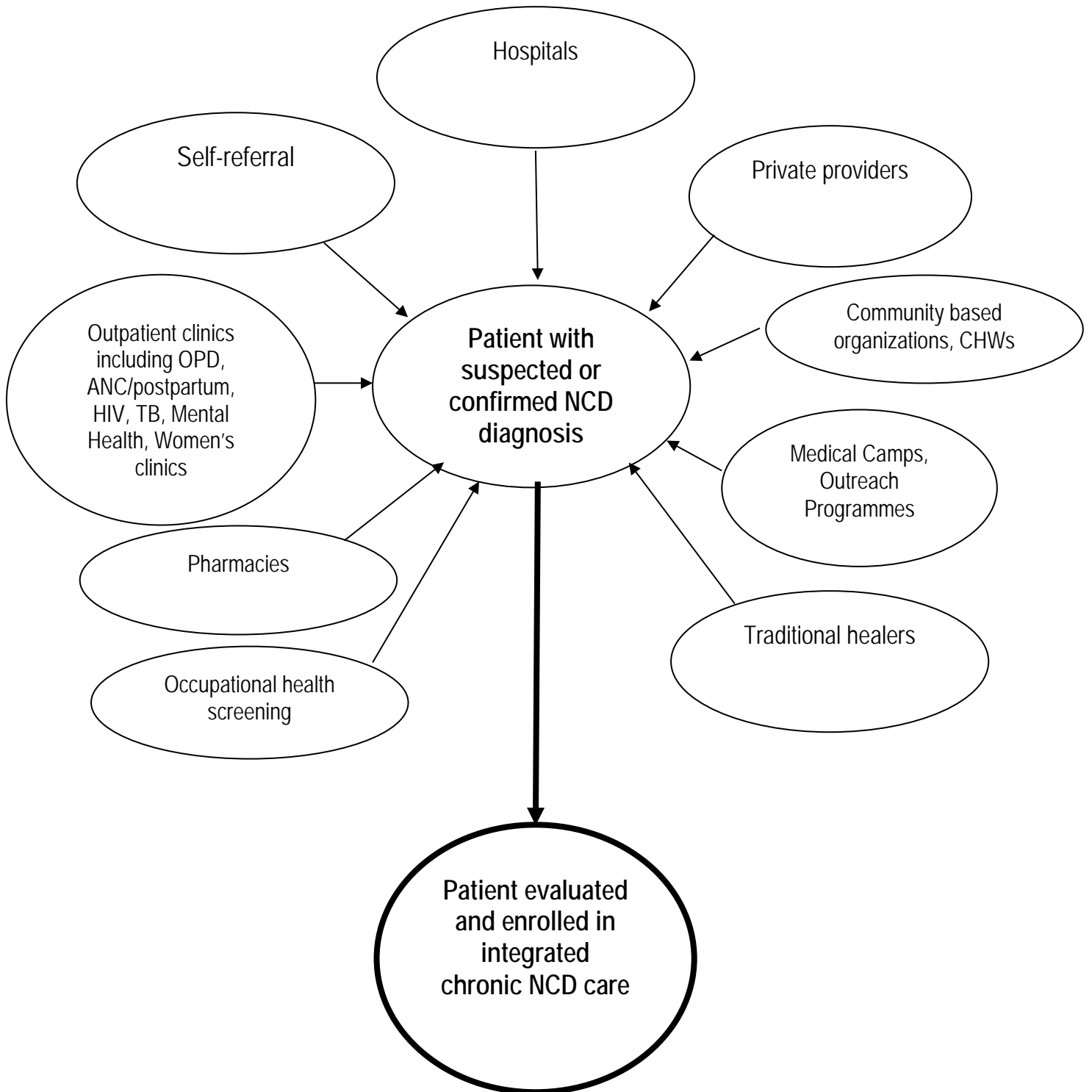
Integrated Noncommunicable Disease (NCD) Chronic Care, this guideline module, includes three sections:

- Cardiovascular risk-based management of hypertension, diabetes and other risk factors to reduce heart attacks, hypertensive heart disease and strokes, as well as secondary prevention after heart attack, angina, stroke or transient ischaemic attack (TIA). This is Protocol 1
- Protocol 2 provides a clinical approach to two chronic respiratory diseases -- asthma and chronic obstructive pulmonary disease (COPD). These conditions are seen commonly and can be managed by the health worker working in first-level facilities.
- Rheumatic heart disease is a serious cardiovascular disease with significant morbidity and mortality in Uganda and is therefore included in this module (Protocol 3).

## Target Audience

The target audience for this guideline module are health workers working at primary care level, in an outpatient department or health centre providing NCD care for adults. This could be a medical officer, clinical officer, or nurse. This module assumes that there are limited technologies/laboratory investigations and tools for implementing essential NCD interventions available onsite. See tables 1-3 in Appendix 1.

# ENTRY POINTS INTO CHRONIC CARE FOR PATIENTS WITH ELEVATED CARDIOVASCULAR RISK, HYPERTENSION, DIABETES MELLITUS, ASTHMA, COPD, RHEUMATIC HEART DISEASE



## SCREENING

Screening allows for the identification of conditions before the person has signs and symptoms and can occur at all of these entry points to chronic care.

WHOM TO SCREEN	ASSESS THEN TREAT AND ADVISE
<p><b>Ask everyone: Do you smoke or have you used tobacco in the past 12 months?</b></p>	<p>If YES, counsel to stop smoking or use tobacco (see <b>A9 Tobacco Cessation</b>). If adolescent is smoking: education on hazards, help to say no.</p>
<p><b>Ask: have you had a heart attack, stroke or transient ischaemic attack (TIA)?</b></p>	<p>Measure blood pressure (BP). Refer to NCD clinic to confirm history and to refer to district clinician for secondary prophylaxis plan. This patient has high cardiovascular risk (CVD risk charts are not needed) and needs to be followed in the NCD clinic</p>
<p><b>Assess for risk for high blood pressure:</b></p> <ul style="list-style-type: none"> <li>• Adults ≥18 years</li> </ul> <p><i>Screen annually if</i></p> <ul style="list-style-type: none"> <li>• ≥40 or</li> </ul> <p>Adults who:</p> <ul style="list-style-type: none"> <li>• Smoke (in last year) or use tobacco</li> <li>• Have a history of diabetes or chronic kidney disease</li> <li>• Are obese</li> <li>• Have a family history hypertension, heart attack, or stroke</li> </ul>	<p><b>Measure blood pressure</b></p> <ul style="list-style-type: none"> <li>• If BP&gt;200 mmHg systolic or 120 mmHg diastolic, give emergency prereferral treatment (<b>Section 4</b>) and refer to hospital.</li> </ul> <p>On this visit:</p> <ul style="list-style-type: none"> <li>• Repeat measurement after 5 minutes if systolic BP&gt;130 mmHg</li> <li>• If BP&gt;140 systolic or &gt; 90 diastolic on second reading on this visit, counsel on high blood pressure and ask patient to follow-up for blood pressure recheck on another day (usually 1 to 4 weeks).</li> </ul> <p>On second visit:</p> <ul style="list-style-type: none"> <li>• Repeat BP.</li> <li>• If BP&gt;140 systolic or &gt; 90 diastolic on second reading on this visit, counsel on hypertension and refer patients to NCD clinic for chronic care.</li> <li>• Adults who have normal BP and not at high risk may be rescreened every 1 to 5 years.</li> </ul>

<p><b>Screen for diabetes in all those meeting criteria for cardiovascular risk assessment</b></p> <ul style="list-style-type: none"> <li>• ≥40 or</li> <li>• Anyone who:</li> <li>• Smokes (in last year)</li> <li>• Has a history of hypertension or diabetes</li> <li>• Has a first degree relative with premature cardiovascular disease (males&lt;55, females&lt;65 years) or diabetes or kidney disease</li> </ul> <p><b>Or who are found to have signs/ symptoms which may indicate diabetes:</b></p> <ul style="list-style-type: none"> <li>• Excessive urination</li> <li>• Excessive thirst</li> <li>• Blurry vision</li> <li>• Unexplained weight loss</li> </ul>	<p><b>Measure blood glucose</b>  Diabetes = fasting blood glucose ≥ 7 mmol/l (126 mg/dl), or random blood sugar ≥ 11.1 mmol/l (200 mg/dl) or HbA1c ≥6.5% twice unless symptomatic.</p> <p><b>If possible diagnosis of diabetes: Send for second FBG or HbA1c and refer to NCD clinic to confirm diagnosis and manage diabetes.</b></p> <p><i>For all patients with a history of diabetes or on treatment for diabetes, refer to NCD clinic if not enrolled already.</i></p>
<p><b>Assess for cardiovascular risk if:</b></p> <ul style="list-style-type: none"> <li>• ≥40 or</li> <li>• Anyone who:</li> <li>• Smokes (in last year)</li> <li>• Has a history of hypertension or diabetes</li> <li>• Has a first degree relative with premature cardiovascular disease (males&lt;55, females&lt;65 years) or diabetes or kidney disease</li> </ul>	<p>To assess cardiovascular risk: SEE STEPS IN TABLE 1.2 IN PROTOCOL 1</p>

# SUMMARY OF THE GENERAL PRINCIPLES OF GOOD CHRONIC CARE<sup>1</sup>

The chronic care model describes the health care system changes that help practices, particularly those in primary care settings, improve outcomes among patients with chronic illness. The system changes support the development of informed, activated patients and prepared, proactive health care teams, whose interactions become more productive and satisfying around chronic disease.

The general principles are focused mainly on the organization of the primary care health centre and the interaction of the health worker and the patient at the health facility or through outreach. Health workers are taught to use the '5As' (assess, advise, agree, assist, arrange) in all clinical interactions, which helps develop and refine patient self-management, and reinforces a treatment partnership with the patient.

Table 4: The 10 general principles of good chronic care

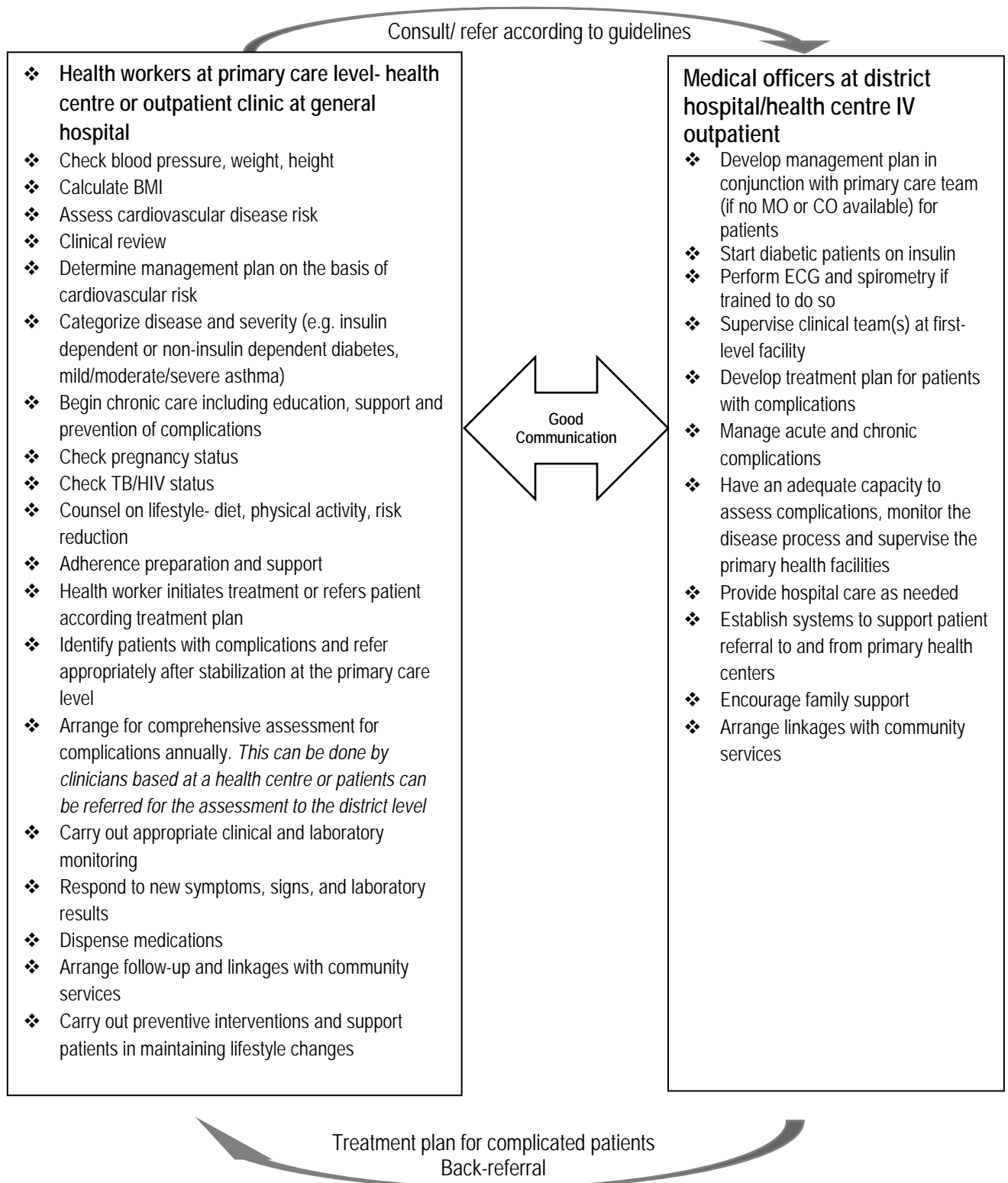
1. Develop a treatment partnership with your patient.
2. Focus on your patient's concerns and priorities.
3. Use the **5 As: Assess, Advise, Agree, Assist and Arrange.**
4. Support patient self-management and family support.
5. Organise proactive follow-up.
6. Involve "expert patients," peer educators and support staff in your health facility.
7. Link the patient to community-based resources and support.
8. Use written information—registers, treatment plan, treatment cards and written information for patients—to document, monitor and remind.
9. Work as a clinical team.
10. Assure continuity of care.

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<sup>1</sup> IMAI General Principles of Good Chronic Care, WHO, 2004 [http://www.who.int/hiv/pub/imai/primary\\_general/en/index.html](http://www.who.int/hiv/pub/imai/primary_general/en/index.html)

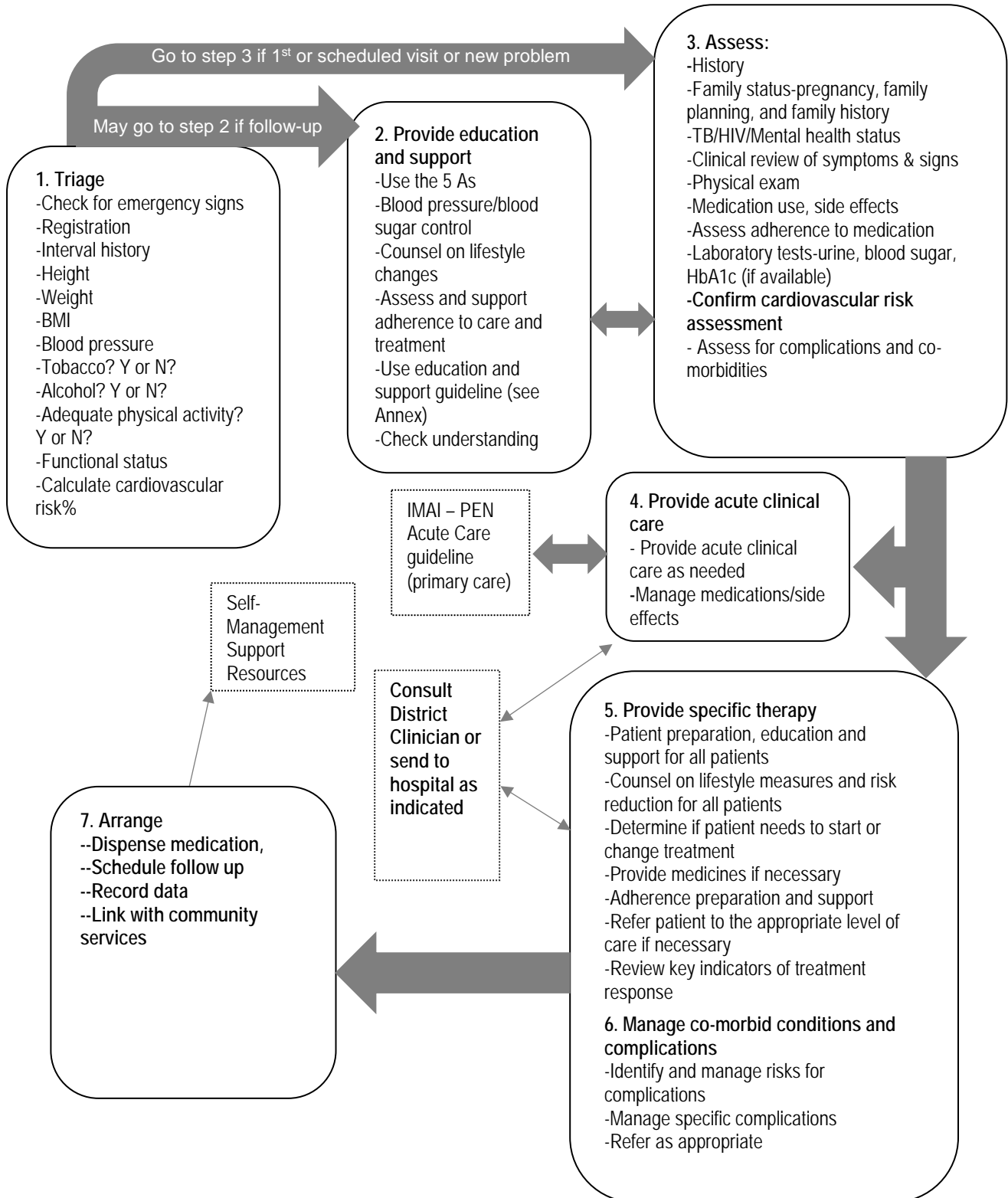
# CLINICAL TEAM ROLES AND RELATIONSHIPS OF HEALTH WORKERS IN CHRONIC CARE NONCOMMUNICABLE DISEASE (NCD) CLINIC

The chronic care clinical team should include the medical/clinical officer at the health centre or next level referral centre, nurses, auxiliary staff (non-clinical health workers or lay providers), nutritionist (if available) and links to the community level/health posts.





# PROTOCOL 1: CLINICAL ASSESSMENT AND MANAGEMENT FOR ELEVATED CARDIOVASCULAR (CVD) RISK, HYPERTENSION, OR DIABETES



# 1 TRIAGE (for registration-this may be clerk or initial health worker; top portion of chronic care form may be filled out)

- Always check for emergency signs (airway, breathing, circulation, unconscious/convulsing or pain)—see Acute Care. If any positive signs, call health worker immediately who will provide emergency treatment and decide if referral needed to hospital
- Greet the patient
- Register if new patient
- If follow-up, retrieve records/file
- Measure height at first visit
- Measure weight at **each visit**
- Calculate **BMI**

## TABLE 1.1-CALCULATE BMI

Body Mass Index (BMI) is an estimate of total body fat and is derived from the patient's weight in kilograms (kg) and the height in meters (m). Use the **BMI table** on the inside back cover, which is derived from the following formula:

$$\text{BMI} = \frac{\text{Weight (kg)}}{\text{Height (m)} \times \text{Height (m)}}$$

**BMI  $\geq 25$  is considered overweight**  
**BMI  $\geq 30$  is obese.**

- Measure blood pressure at **each visit**
- Smoking? Y or N?- Record "Yes" if smoking during the last 12 months. If YES, record on patient monitoring card. If other tobacco use, write in below within the risk assessment box.
- Alcohol? Y or N?-Record "Yes" if person drinks alcohol in last 30 days. If yes, how often and record number of units per day. One unit (drink) = half pint beer/lager (5% alcohol), 100 ml of wine (10% alcohol), spirits 25 ml (40% alcohol).
- Adequate physical activity? Y or N?- Record "Yes" if person engages in at least 30 minutes of physical activity 5 days a week (or 2.5 hours per week)
- Determine reason for visit
- For new patients, ask about any concerns that they have. For follow-up, take interval history
- **Determine functional status--**Record whether patient at initial visit or if there is a change:
  - Able to work, go to school, do housework, harvest or play (in child) (**W**)
  - Ambulatory but not able to work (**A**)
  - Bedridden (**B**)

- Estimate cardiovascular disease (CVD) risk at first visit then as indicated using a total risk approach
  - Ask about prior cardiovascular disease (heart attack, stroke). **Individuals with prior CVD (PCVD) or high risk conditions such as chronic kidney disease (CKD-- which includes diabetes with nephropathy), are considered to have very high cardiovascular risk, and a CVD risk calculation is not needed. These individuals should be treated accordingly.**
  - For other patients, estimate total cardiovascular risk. For patients referred for diabetes, check fasting blood glucose results or arrange.
  - See Appendix 4 for the **WHO CVD risk charts for Eastern Sub-Saharan Africa\*\*** - these charts predict the 10 year risk of a person having a heart attack or stroke
  - Risk charts are based on the following: age, gender, systolic blood pressure, whether the patient has diabetes, smoking status, and total blood cholesterol or BMI

TABLE 1.2- ESTIMATE CVD RISK							
The following steps show how to assess CVD risk for people with no prior CVD, using a risk chart (see Appendix 4). NOTE: CVD risk may be higher than indicated by the charts if the patient has certain indications or conditions.							
STEP 1: Have the following information ready	<ul style="list-style-type: none"> <li>• Age</li> <li>• Sex</li> <li>• Smoker or non-smoker</li> <li>• Systolic BP</li> <li>• Presence of absence of diabetes (not required if using non-laboratory based chart)</li> <li>• Total blood cholesterol (not required if using non-lab based chart; if in mg/dl, divide by 38 to convert to mmol/l)</li> <li>• Body mass index (BMI) (for non-lab based chart)</li> </ul>						
STEP 2: Have CVD chart available for Eastern Sub-Saharan Africa and determine which of the two charts to use based on availability of information.	<ul style="list-style-type: none"> <li>• WHO CVD chart-Eastern Sub-Saharan Africa (Appendix 4)</li> </ul> <table border="1"> <thead> <tr> <th colspan="2">Blood cholesterol information</th> </tr> <tr> <th>Available</th> <th>Not available</th> </tr> </thead> <tbody> <tr> <td>Use lab-based chart (with cholesterol)</td> <td>Use non-laboratory based chart (with BMI)</td> </tr> </tbody> </table>	Blood cholesterol information		Available	Not available	Use lab-based chart (with cholesterol)	Use non-laboratory based chart (with BMI)
Blood cholesterol information							
Available	Not available						
Use lab-based chart (with cholesterol)	Use non-laboratory based chart (with BMI)						
STEP 3: Using the charts							
1. Select the appropriate sub-chart depending on the presence of absence of diabetes history (for cholesterol charts only) *This step is not required for BMI charts	4. Select age group box.						

2. Select male or female table as appropriate	5. Within this box, find the nearest cell where the individual's systolic blood pressure and total blood cholesterol (or BMI) cross
3. Select smoker or non-smoker box	6. Record CVD risk percentage in patient's chart. The colour of the cell indicates the 10-year risk of combined heart attack and stroke risk (fatal and non-fatal)

**If this is a new patient or new problem, the patient should see the clinician for treatment plan before counselling the patient (go to step 3).**

**ASK- for all follow-up visits:**

- Have you had any medication changes or new medications started since the last visit? Have you had any recent hospitalisations? Record in patient card.
- Any problems/concerns that you have today?
- Decide if patient needs to see clinician on this visit. Patient should see the clinician:
  - If it is their first ever visit
  - For scheduled clinical visit
  - For any new symptoms

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  - For any new symptoms

## 2 EDUCATE AND SUPPORT THE PATIENT AT EACH VISIT

These tasks can and should be done by all members of the clinical team- clinical health worker (medical officer or nurse), non-clinical health worker (auxiliary health staff) or lay providers (expert patients). Detailed **Education and Support guidelines** are provided in **Annex A** at the end of this guideline module.

**For the first visit** education and counselling should be done after the health worker assesses the patient and develops a treatment plan (Step 3 in Sequence of Care). For follow-up visits and if no new problems, the patient may go to counselling after triage (Step 2 in Sequence of Care).

On every visit, key education and counselling laid out in Annex A needs to be provided over time to the returning patients. Expert patients (lay providers with the chronic condition) are often very effective in delivering this counselling after they have been trained. This counselling is then reinforced by any trained member of the clinical team:

- Patients need education on the basics of their chronic disease or condition- elevated cardiovascular risk, hypertension, diabetes, or established cardiovascular diseases. (Asthma, COPD and rheumatic heart disease are covered in other sections of this guide). Patient may have several conditions at the same time.
- Counsel all patients on the need for lifestyle changes and regular follow-up
- Educate and counsel on their disease(s), its treatment, adherence
  - Advise on foot hygiene if diabetic
  - Discuss blood pressure control and/or blood sugar control
  - Talk about adherence to current medication- See **Section 9**
- Discuss concerns about acute and chronic complications that may have developed
- Acknowledge patient's efforts and successes at self-management

## 3 ASSESS

These guidelines assume that patient is linked into chronic care with a diagnosis of hypertension and/or diabetes or elevated cardiovascular risk (CVR) or prior cardiovascular disease (PCVD)- either from within your clinic by a health worker using the IMAI-PEN Acute Care guideline module, or referred for follow-up from the hospital. In some cases the patient may be referred from the community through a screening program or from another health clinic for suspected cardiovascular risk or disease and may need further testing for confirmation.

The aim of the clinical assessment is to

- Determine the patient's goal for the visit (why did you come to the clinic today?)
- Evaluate the patient
  - Check for emergency signs (use the Quick Check- see *IMAI-PEN Acute Care*)
  - Assess the patient—history and physical exam
  - Review the laboratory results
- Confirm the cardiovascular disease risk which involves confirming the diagnosis of hypertension or diabetes
  
- Identify if patients need referral and refer patient to next level as indicated
- Identify any lifestyle risk factors
- Identify if patient already has established cardiovascular disease
- Identify any chronic complications
- Assess medication adherence and any side effects

### 3.1 Assess the patient

First determine the patient's goal for today's visit.

#### **Ask**

##### **For the first and annual visit:**

- Ask about **medical history** (including other chronic problems-kidney/heart/lung problems, HIV--if HIV positive- see **Section 3.7**, and hospitalizations). Specifically, ask about:
  - History of heart disease? If yes, what type? Have you been diagnosed with angina or a heart attack? Do you take medicines for these conditions?
  - Have you been diagnosed with rheumatic heart disease (if yes, refer also to Protocol 3)?
  - Have you had a stroke (one-side paralysis or severe pressure)?
  - Diabetes, kidney disease, or hypertension?
- What **medications** do you take (including traditional remedies or vitamins)?
- Do you have any **allergies** to medications?
- If YES to **smoke or tobacco use**, ASK- how many cigarettes or packs per day do you smoke and for how many years? If other tobacco use, record how often in the past year? See **A9** for tobacco cessation counselling. Are you regularly exposed to secondhand smoke in the last 12 months?
- If YES to **alcohol consumption**, ASK- How many days per week do you drink alcohol? How much alcohol do you drink daily-1 unit= half pint (237ml) of beer/ lager; 100ml wine (10% alcohol); 25ml spirits (40% alcohol)? Record on patient card. See **A10** for assessment of harmful use of alcohol or dependence.

- If NO to adequate **physical activity**, ASK- Do you engage in physical activity (through daily tasks, work-related activity, leisure activities)? What types of physical activity do you have on a daily basis? For how long? See **A5** for counselling on adequate physical activity.
- Have you had any of the following? **If yes**, ask for how long:
  - Chest pain, or chest tightness or discomfort? If YES, ask specifically about:
    - Do you get the pain in the centre of the chest or left chest or left arm?
    - Do you get pain in your chest when you walk uphill or hurry
    - Do you slow down if you get the chest pain while walking?
    - Does the pain go away if you stand still or if you take a tablet under the tongue?
    - Does the pain go away in less than 10 minutes?
    - Have you ever had severe chest pain across the front of your chest lasting for 30 minutes or more?
    - If YES, refer patient. If current symptoms, see Section 4 for acute treatment prior to referral.
  - Have you ever had any of the following: difficulty in talking, weakness of arm and/or leg on one side of the body or numbness on one side of the body? If YES, refer patient. If current symptoms- see *IMAI-PEN Acute Care* prior to referral.
  - Increased urination, thirst (or drinking of water), hunger, or unexplained weight loss? (indicates diabetes is out of control)
  - Nocturia (waking more than once to urinate at night)?
  - Headache?
  - Visual changes – e.g. blurry vision, spots, floaters, dark areas or vision loss?
  - Tiredness?
  - Fever?
  - Cough? If YES and greater than 2 weeks (especially if diabetic), consider TB—See 3.7.
  - Dizziness?
  - Shortness of breath?
  - Tingling, numb or painful feet or legs? **If yes**, ask for signs of claudication-does the pain start after walking a certain distance and is relieved with rest?
  - Swelling of feet/legs? Swelling of face or puffiness of eyes?
  - Poor wound healing?
  - Any other pain? **If yes**, where?
  - Sexual problems (Inability to maintain erection)?
  - Have you been feeling sad or unhappy or have you lost interest in your normal activities recently? If YES-see **A17 for depression assessment**

**For all visits:**

- How have you been?
- Are there any problems or concerns that you have?
- Have you needed urgent medical care? **If yes**, ask for record, diagnosis and treatment.
- Any new medications? New allergies?
- Assess adherence if already on treatment
  - What problems have you had taking your medicines?
- If smoker- ask if still smoking? How much?
- If YES to alcohol use or harmful alcohol use at last visit, ask about alcohol reduction.
- If NO to adequate physical activity, ask what usual physical activities are you doing? Discuss lifestyle.
- Are you taking any other medicines or drugs (traditional remedies, illicit drugs, etc)?
- If feeling sad or unhappy or have lost interest in normal activities recently--See **A17 for depression assessment**

## 3.2 Assess family status

- Ask about family history of hypertension, heart problems (premature cardiovascular disease- heart attack, stroke, angina, or TIA in a mother or sister before 65 years or in father/brother before 55 years), stroke or diabetes in first degree relatives, as the knowledge helps in assessment of risk factors for disease progression or complication.
- For women of childbearing age:
  - Determine pregnancy status; **pregnant women with cardiovascular problems, hypertension or diabetes may need to be referred to higher level of care.**
  - Determine if breastfeeding status in postpartum women,
  - Assess family planning use; offer contraception if desired.
  - If woman has STI symptoms, see Acute Care.
  - Discuss cervical cancer screening.

**Note:** Several NCD medicines should not be given to pregnant women e.g. ACE inhibitors, ARBs, and statins.



### 3.3 Look, listen and feel

#### Look, listen and feel

##### LOOK for:

- Pallor. *If pale*, check haemoglobin.
- Yellow eyes or skin (jaundice)
- Facial or periorbital oedema (swelling of face)
- Large abdomen (may be fat or fluid (ascites))
- Check for jugular venous distension (JVD)

##### LOOK and FEEL:

- Leg swelling (oedema) - is it pitting, how extensive (up to ankle, up to knees)?
- Palpate apex beat for heaving and displacement
- Examine abdomen- is there tenderness in right upper quadrant (liver)?

##### LISTEN and FEEL:

- Listen to heart (for rhythm and heart murmurs). If loud murmur, ask about RHD diagnosis or congenital heart disease. Refer to district clinician.
- Listen for crackles in the lungs (on one or both sides)

##### *If diabetes, also:*

- Look for skin infection
- Look in mouth for
  - dental problems including inflamed gums and teeth with cavities.
  - thrush.
- Inspect the footwear
- Check feet, for appearance including ulcers, pulses, sensation and signs of infection  
**To inspect feet and look for sensory loss:** Test with 10-g monofilament for sensory loss on the pressure points of feet (see illustration)



- Review weight trend and BMI.
  - If weight loss, ask about food availability and intake (may also indicate poor diabetes control)
  - If weight gain, enquire about eating patterns, exercise/level of physical activity
- Review blood pressure and trend on the patient monitoring card. Repeat BP if needed.
- Review urine and blood results – see next section.

### 3.4 Laboratory tests and other diagnostics

Minimum tests for <b>first and annual</b> follow-up visit for all patients (CVD assessment, hypertension or diabetes)	<b>On every follow up visit for diabetes</b>
<ul style="list-style-type: none"> <li>• Fasting blood glucose *</li> <li>• Urine dipstick****</li> <li>• Total blood cholesterol** (or lipid profile if available)</li> <li>• Serum creatinine and potassium prior to start of ACE***</li> </ul> <p><b>For diabetics:</b></p> <ul style="list-style-type: none"> <li>• Haemoglobin A1c (every 6 months)</li> <li>• Serum creatinine and potassium***</li> </ul>	<ul style="list-style-type: none"> <li>• Check fasting* or casual (random) blood glucose</li> </ul>

\*Fasting is preferable to casual (random) blood glucose for scheduled visits.

\*\* For some tests, samples may need to be sent to a higher level facility. If not available at the health centre, consideration should be given for referral for comprehensive assessment once a year. Note: monitoring blood cholesterol on statin treatment is not mandatory. If unable to recheck annually, recheck periodically, if feasible, to assess risk.

\*\*\*Ideally, serum creatinine and potassium would be checked at baseline and annually. At minimum, it should be sent annually in DM and prior to start of ACE inhibitors.

\*\*\*\* For DM, microalbuminuria dipstick, if available, can be used to calculate urine albumin and albumin to creatinine ratio and serum creatinine (g calculation) for chronic kidney disease (CKD) screening. CKD is defined by GFR<60 ml/min/1.73m<sup>2</sup> or the presence of moderate or severe albuminuria (albumin-creatinine ratio of ≥ 30mg/mmol)

#### Additional lab or investigations

Woman of childbearing age (15-49 years) if pregnancy status uncertain	Pregnancy test
Eye examination- REFER for dilated pupil retinal exam	Diabetics: at diagnosis and every year

\*\*\*Ideally, serum creatinine and potassium would be checked at baseline and annually. At minimum, it should be sent annually in DM and prior to start of ACE inhibitors

In order to identify complications early, it is important for the health worker to be systematic in their assessments. This includes asking pertinent questions during regular follow-up, physical exam, and careful review of all laboratory tests and other diagnostics. In addition to their own evaluation, they should arrange referral for comprehensive assessment including:

- Specialist evaluation for patients with history of prior CVD such as MI or stroke or chronic kidney disease
- Timely referral for new problems that may be a sign of complication- e.g. proteinuria in a patient with hypertension, new ulcer in diabetic

### 3.5 Confirm the diagnosis of diabetes and hypertension

#### Confirm the diagnosis of diabetes

The **diagnosis of diabetes should always be confirmed** by repeating the blood glucose test on another day. A diagnosis of diabetes mellitus can also be made on the grounds of clinical presentation accompanied by high blood glucose values.

Diagnosis of diabetes:

- ✓ High glucose reading on two separate occasions (see table below)  
OR
- ✓ High glucose reading AND symptoms of high glucose:
  - Excessive thirst (polydipsia)
  - Excessive urination (polyuria)
  - Unexplained weight loss
  - Vision changes

The table below shows the cut off levels for fasting and casual (or random) blood glucose. If laboratory services are not available, a glucometer may be used with these diagnostic cut off values.

<b>Glucose above which a diagnosis of diabetes is made*:</b>	
<b>Fasting blood glucose</b> - fasting means that patient has had no food or drink except water for 10 hours prior to test.	≥7.0 mmol/l (126 mg/dl)
<b>Casual (random) blood glucose (RBG)</b>	≥11.1 mmol/l (200 mg/dl) <u>with symptoms</u> ; if no symptoms, do a fasting blood glucose or HbA1c to confirm diabetes
<b>2- hour blood glucose (oral glucose tolerance test)</b> - testing is done 2 hours after 75 g oral load of glucose has been ingested.	≥11.1 mmol/l (200 mg/dl)

If HbA1c laboratory testing available:

<b>Haemoglobin A1c above which a diagnosis of diabetes is made:</b>	
Haemoglobin A1c (HbA1c)**	≥6.5% (48mmol/l)

Note that the referred patient's repeat glucose may no longer be in the diabetic range. For borderline glucose, or intermediate hyperglycaemia (pre-diabetes), this is a range for which persons are at higher risk to develop diabetes and should be considered for diabetes prevention interventions such as lifestyle counselling:

- Fasting blood glucose- 6.1-6.9 mmol/l (110mg/dl to 125mg/dl)
- HbA1c-6.0-<6.5%

\*If no blood glucose testing available, a urine sugar may be used, and if positive, patient should be referred for confirmatory blood glucose test.

\*\*Allow 2 weeks between tests; should be used for diagnosis only if stringent quality control is available

## Confirm the diagnosis of hypertension

The **diagnosis of hypertension** is made when the blood pressure is elevated on at least 2 separate readings on different days:

Systolic blood pressure (SBP)  $\geq 140$  and/or

Diastolic blood pressure  $\geq 90$

→ If the HW in triage records or informs you that the patient had an elevated blood pressure, recheck the blood pressure.

### 3.6 Confirm the cardiovascular disease (CVD) risk at the first visit then as indicated by the risk

- During triage, the health worker asked about prior cardiovascular disease and estimated the cardiovascular risk percentage- this is an estimate of the patient's risk of a fatal or non-fatal heart attack or stroke during the next 10 years.
- You need to confirm this risk assessment to be sure it is accurate:
  - Ask about a history of prior cardiovascular disease (established heart attack, angina, stroke, TIA). Also ask whether the patient has been diagnosed chronic kidney disease (CKD). **Individuals with prior CVD or CKD are considered to have high cardiovascular risk- a CVD risk calculation is not needed.**
  - If no prior CVD or CKD, the total CVD risk must be calculated using the risk charts. In the prior step, a diagnosis of diabetes and high blood pressure would have been confirmed. Now, review that all of the information has been collected to make a risk estimation:
    - Presence or absence of diabetes
    - Gender
    - Smoker or non-smoker
    - Age
    - Systolic blood pressure
    - Total blood cholesterol or BMI-If cholesterol is not known, use the non-laboratory based chart with BMI instead of cholesterol (Note: these charts also do not require the diabetes status to be known).
  - Estimate the cardiovascular risk. **Record on the patient card.**

It is important to recognise that risk charts underestimate the risk in those with family history of premature vascular disease, obesity, raised triglyceride levels, already on antihypertensive treatment, approaching the next age or systolic blood pressure category, low HDL cholesterol level, microalbuminuria, raised pulse rate, socioeconomic deprivation, obesity (including central obesity), and sedentary lifestyle.

### 3.7 Review important co-morbidities: TB, HIV status, mental health/ depression

**Assess HIV status.** Advise on repeat testing as per national HIV guidelines if patient has negative or unknown HIV status.

- If HIV positive, is the patient on antiretroviral treatment? Record diagnosis date, where in care and treatment information on the patient monitoring card.

#### HIV and cardiovascular risk

- Patients with HIV on ART may be at increased risk of developing metabolic syndrome characterized by high blood glucose, high cholesterol, insulin resistance, fatty liver, increased abdominal fat and increased risk of diabetes and cardiovascular disease and therefore CVD morbidity and mortality.<sup>2</sup>
- Some ARVs interact with antihypertensives. It is important to check for drug interactions when patients are on ARVs- see Table X.

#### HIV and diabetes

- Some antiretrovirals (ARVs) can make it more difficult to control blood glucose. It is important to know which ARVs your patient is taking, particularly protease inhibitors such as indinavir.
- It is important to note that metformin and NRTIs can both cause lactic acidosis. For patients with both HIV and diabetes, avoid tenofovir.
- Peripheral neuropathy can occur as a result of poor glycaemic control in diabetes but also can be a side effect of medications such as didanosine (ddI) or INH (used in TB). It can also occur in HIV with a low CD4 count.

#### TB and diabetes

- Diabetes is an important risk factor for tuberculosis and may affect the presentation of TB as well as the person's response to treatment.<sup>3</sup>
- TB may also worsen glycaemic control in people with diabetes.

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<sup>2</sup> Consolidated Guidelines on HIV Prevention, Diagnosis, Treatment and Care of Key Populations: 2016 Update. Geneva: World Health Organization; 2016.

<sup>3</sup> International Union Against Tuberculosis and Lung Disease and World Health Organization, *Collaborative Framework for Care and Control of Tuberculosis and Diabetes* (Geneva: World Health Organization, 2011), [whqlibdoc.who.int/publications/2011/9789241502252\\_eng.pdf](http://whqlibdoc.who.int/publications/2011/9789241502252_eng.pdf)

### **Assess for TB- in diabetics, screen for TB symptoms annually**

Suspect tuberculosis (TB) if:

- cough >1 week (whether productive of sputum or not)
  - persistent fever
  - unexplained weight loss
  - suspicious or enlarged lymph nodes
  - night sweats
- **If TB suspected→Send a sputum for AFB microscopy or GenExpert. Refer to medical officer if not producing sputums or if suspicious lymph nodes. Then follow national TB guidelines**
  - TB diagnosis and treatment plan

### **Assess mental health/depression**

In the “ask” section, there is a question about being sad or losing interest in usual activities. A positive answer to this question should lead the health worker to ask further questions regarding mental health problems. See **Annex A17** to assess for depression. It is important to note that mental health problems include other conditions besides depression which are not being covered in this guideline manual. For more information on mental health problems-see the IMAI District Clinician Manual Volume 2 or WHO mhGAP guidelines.

#### **Mental health problems and cardiovascular disease**

- Depression is more common in patients after a MI in comparison to general population<sup>4</sup>.
- Depression and anxiety can increase the risk of developing CVD, and CVD can increase the risk of developing depression and anxiety. Depression and anxiety can<sup>5</sup>:
  - Increase rate of atherosclerosis
  - Increase rate of unhealthy lifestyle (smoking, poor eating habits, decreased medication compliance, decreased total exercise)
  - Increase hormone levels which lead to increased blood glucose levels and increased blood pressure

<sup>4</sup> Mensah GA and Collins PY. Understanding mental health for the prevention and control of cardiovascular diseases. *Glob Heart*. 2015 Sep; 10(3): 221-224.

<sup>5</sup> Chaddha A et al. Mental health and cardiovascular disease. *Am J Med*. 2016 Nov; 129(11): 1145-1148.

# 4 PROVIDE ACUTE CLINICAL CARE AND REFER AS NEEDED

Provide acute clinical care and refer patients with severe illness or co-morbidities

For emergency patients, assess and manage using Quick Check- see *IMAI District Clinician Manual*. If severely ill, give **pre-referral treatments** and **refer urgently** to hospital. These include:

- **Hypertensive emergency** - If BP > 200 mmHg systolic or >120 mmHg diastolic or BP > 180mmHg systolic or >110 mmHg diastolic with symptoms consistent with evidence of end organ damage (severe headache, chest pain, shortness of breath, visual changes, altered mental status, seizures, reduced urine output, papilloedema (swelling of the optic disc from increased intracranial pressure), focal neurologic deficit/weakness, nausea, vomiting, or signs of heart failure)-Repeat BP. If still high, **refer urgently to hospital**. If referral will take some time, start 2 oral antihypertensives (in different classes) and refer to hospital.
- If new **chest pain**, chest tightness or change in severity of chest pain, no history of trauma, and history suggest cardiac ischaemia-**give aspirin (150 or 300 mg, chewed) and refer urgently to hospital**.
- If symptoms of **cardiac failure** (shortness of breath, difficulty breathing, leg swelling) or heaving cardiac apex-**prop up patient, give oxygen (and check oxygen saturation) if available, give furosemide 40 mg if known heart disease and refer urgently to hospital**.
- If symptoms of sudden weakness or numbness on one side of the body (arm, leg or face), difficulty speaking, confusion, visual problems, difficulty walking, loss of balance or coordination (stroke or transient ischemic attack)-**Measure BP and check blood glucose with fingerstick if altered mental status, manage, and refer urgently to hospital**
- If symptoms/signs of severe hyperglycaemia (increased thirst, blurred vision, increased urination, fatigue/weak, weight loss, confusion, abdominal pain, nausea/vomiting) or blood glucose  $\geq 18$  mmol/l (or  $\geq 324$  mg/dl) and urine ketones 2+ or signs of dehydration-**provide urgent treatment of very high glucose pre-referral**.

**If high glucose (blood glucose  $\geq 18$  mmol/l or  $>324$  mg/dl):**

- ✓ If in shock (SBP < 90 mmHg), give 1 L normal saline as quickly as possible (DO NOT add K+)
- ✓ If not in shock, give 10-15 ml/kg normal saline per hour (approximately 1L normal saline for a 70 kg person)
- ✓ Refer urgently to hospital

- If symptoms/signs of severe hypoglycaemia (shakiness, sweating, irritability, confusion, dizziness, unconsciousness/ coma) or blood glucose <2.8mmol/l (50 mg/dl)-**give glucose**

Give glucose

- ✓ Give by IV. Make sure IV is running well. Give by slow IV push.

Adolescent or Adult	25-50 ml of 50% glucose solution*
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\*50% glucose solution is the same as 50% dextrose solution or D50.

- ✓ If no IV glucose if available, give sugar water by mouth or nasogastric tube.
- ✓ To make sugar water, dissolve 4 level teaspoons of sugar (20 grams) in a 200 ml cup of clean water.



- Anuria
- Any severe infection or infected ulcer
- Severe leg pain with symptoms of claudication
- Symptomatic tachycardia

**Refer promptly if patients have co-morbidities or conditions which cannot be handled at primary care level-to the next level of care for assessment by district clinician/medical officer.** Many acute and chronic complications of hypertension and diabetes reflect end-organ damage.

- Young patients (<40 years) with BP  $\geq$ 140/90 –to exclude secondary hypertension. If available, basic workup may be done at first level and then referred as needed.
- Prior cardiovascular disease patient who has not previously been assessed- known (not acute) prior heart disease, stroke, transient ischemic attack, kidney disease
- Irregular pulse
- Cardiac murmurs
- Persistent BP  $\geq$  140/90 (in DM  $\geq$ 130/80) while on treatment with 2 or 3 agents
- Pregnant women with diabetes or hypertension
- Any proteinuria or elevated creatinine or signs/symptoms of kidney problems or failure
- Newly diagnosed diabetes with urine ketones 2+ or in lean persons of <30 years
- Total cholesterol >8mmol/l (310 mg/dl)
- DM with poor control despite maximal metformin with or without sulfonylurea
- DM with recent deterioration of vision or no eye exam in 2 years

## 5 PROVIDE SPECIFIC THERAPY

### 5.1 Plan treatment based on WHO cardiovascular risk assessment:

RISK	FOLLOW-UP	COUNSEL AND TREAT	ADD**
<10%	12 months for CVD risk <i>-monitor response to counselling and treatment as needed</i>	-Lifestyle measures* -Treat with antihypertensive if BP $\geq 140/90$ on at least 2 visits on different days -Start antihypertensive therapy on same visit if BP $\geq 160/100$	-Consider statin*** if total cholesterol $\geq 8\text{mmol/l}$ and advise to follow a lipid lowering diet
10-<20%	3 months until targets are met, then 6-9 months for CVD risk <i>-monitor response to counselling and treatment as needed</i>	-Lifestyle measures* -Treat with antihypertensive if BP $\geq 140/90$ on at least 2 visits on different days -Start antihypertensive therapy on same visit if BP $\geq 160/100$	-Consider statin if total cholesterol $\geq 8\text{mmol/l}$ and advise to follow a lipid lowering diet
20-<30%	3 months until targets are met, then 3-6 months for CVD risk <i>-monitor response to counselling and treatment as needed</i>	-Lifestyle measures* -Treat with antihypertensive if BP $\geq 140/90$ on at least 2 visits on different days -Start antihypertensive therapy on same visit if BP $\geq 160/100$	-Statin if total cholesterol $> 5\text{mmol/l}$ despite lipid lowering diet -Consider nicotine replacement therapy or other pharmacotherapy to motivated smokers who are not able to quit with counselling
$\geq 30\%$ OR Prior CVD (confirmed heart attack, angina, stroke or TIA), chronic kidney disease****	3 months for CVD risk <i>-monitor response to counselling and treatment as needed</i>	-Lifestyle measures* - Aim for BP $< 130/80$	-Statin and advise to follow lipid lowering diet -Consider low-dose aspirin if no clear contraindications (allergy or bleeding problems) if prior CVD -Consider nicotine replacement therapy or other pharmacotherapy to motivated smokers who are not able to quit with counselling
Diabetes at any CVD risk level	3 months <i>-monitor response to counselling and treatment as needed</i>	-Lifestyle measures* -and advise to follow diabetic diet -OHA or insulin as indicated for diabetes management - Aim for BP $< 130/80$	-Statin if 40-75 years

\*Lifestyle measures include counsel on a heart healthy diet, 30 minutes of physical activity at least 5 times per week (or 150 minutes per week), smoking cessation/ avoid second-hand tobacco smoke, moderation of alcohol consumption, weight loss if overweight or obese—see Annex A1 to A7

\*\*Add medication. Statin e.g. atorvastatin 5-40 mg daily; aspirin 75-100 mg po daily; nicotine replacement therapy or pharmacotherapy e.g. bupropion if available.

\*\*\*Statins should not be used in women who are or who may become pregnant

\*\*\*\*Patients with prior CVD or renal disease should continue the treatment as prescribed and be considered as having high cardiovascular risk. See also **Section 5.4** for secondary prevention for prevention of recurrent CVD events in patients with prior CVD.

## 5.2 Essential components of hypertension treatment

Treatment for hypertension includes non-pharmacological or lifestyle measures as well as pharmacological treatment (medications).

### Blood pressure targets:

-General <140/90

-In patients with high risk (diabetics, chronic kidney disease, prior CVD or CVD risk  $\geq 30\%$ ), aim for BP <130/80 if able to lower blood pressure without signs of hypotension.

### 5.2.1 Non-pharmacologic therapy

Patient needs to understand what hypertension is- use education box A10.

**Lifestyle modification** is an essential component of the comprehensive chronic care of patients with hypertension. These interventions have been shown to improve outcomes with better BP control and less cardiovascular complications. Start all patients with hypertension on non-pharmacological therapy.

Use the counselling and education boxes in Annex A to counsel on:

- heart healthy diet (A1) and additional principles of dietary management for patients with hypertension (A2). If the patient is obese, also use A7.
- increased physical activity (A5)
- tobacco cessation (A9) and reducing harmful alcohol use (A10).

### 5.2.2 Pharmacologic therapy for hypertension

Start antihypertensive medicines for the following patients:

- Patients at any CVD risk with persistent BP  $\geq 160/100$
- Patients with persistent BP  $\geq 140/90$
- Consider starting patients with high CVD risk (see box above) with persistent BP  $\geq 130/80$

Determine treatment regimen then modify based on response:

First visit: In addition to lifestyle measures, first-line treatment should include a **thiazide diuretic, calcium channel blocker, or angiotensin-converting enzyme (ACE) inhibitor**.

- **Re-assess at 1 month:** If the target BP not reached within 1 month,
  - **First assess patient adherence**
  - **Next**, the dosage should be increased.
- **Re-assess monthly:** If BP target still not met,
  - **First, assess adherence**
  - **Next**, maximize dose as patient tolerates and/or add a second medication from different class. If persistent BP  $\geq 160/100$  or high CVD with persistent BP  $\geq 130/80$ , start on 2<sup>nd</sup> agent sooner (do not wait to maximize 1<sup>st</sup> agent).
  - Continue to reassess and intensify dose of second medication until BP target is met
- Once BP at target, encourage patient adherence to medications and lifestyle measures. Advise patient to follow-up as scheduled or sooner if medication side effects or problems or elevated BP (if able to self-monitor). If BP target not met and patient has been taking medications as prescribed, REFER patient to next level.

Follow-up should be determined based on cardiovascular disease risk and need for monitoring for treatment and counselling. For CVD risk  $\geq 10\%$ , follow-up should occur at least every 3 months until targets are met. If any new medications or dose changes, follow-up should be earlier.

**Table 5.2.2 Medication options for hypertension**

Class of medication	Example*	Advice on use of these medications
<b>Thiazide or thiazide-like diuretic (TD)</b>	bendroflumethiazide 2.5-5 mg each morning	-Consider for patients <55 years -May consider 1 <sup>st</sup> or 2 <sup>nd</sup> line for DM -Caution: gout -Common side effects: urinary frequency, electrolyte imbalance, erectile dysfunction (ED)
<b>ACE inhibitor (ACE)</b>	enalapril initially 5 mg once daily (maximum 40 mg divided) or captopril 6.25-25 (max 50 mg) every 8 hours	-1 <sup>st</sup> choice for patients with diabetes -1 <sup>st</sup> or 2 <sup>nd</sup> line if <55 years -Check serum creatinine and potassium before starting ACE inhibitor and when increase dose -Contraindication: pregnancy, advanced renal failure (creatinine>200 mmol/L) -Common side effects: cough, renal impairment
<b>Angiotensin II receptor blocker (ARB)</b>	losartan 50 mg (max 100 mg) once daily	-Consider if intolerance to or instead of ACE inhibitor
<b>Calcium channel blocker (CCB)</b>	amlodipine 5-10 mg daily or nifedipine 20-40 mg twice daily	-Consider 1 <sup>st</sup> or 2 <sup>nd</sup> line if >55 years -Common side effect: ankle swelling
<b>Beta blocker (BB)</b>	atenolol 25-100 mg daily (maximum 100 mg daily)	-Not 1 <sup>st</sup> line treatment choice for uncomplicated HTN -Avoid atenolol as 1 <sup>st</sup> line in uncomplicated HTN if > 60 years or DM -Contraindication: if heart rate < 55 bpm, asthma

\*Other options in class may be preferable and may be used if available at health facility or refer to private for availability

TD- Hydrochlorothiazide 12.5, 25 mg (50mg max), chlorthalidone 12.5mg (25mg)

ACE- lisinopril 20 mg (40 mg max), ramipril 2.5, 5mg (20 mg max, may be divided); start at 1.25 mg if with diuretic

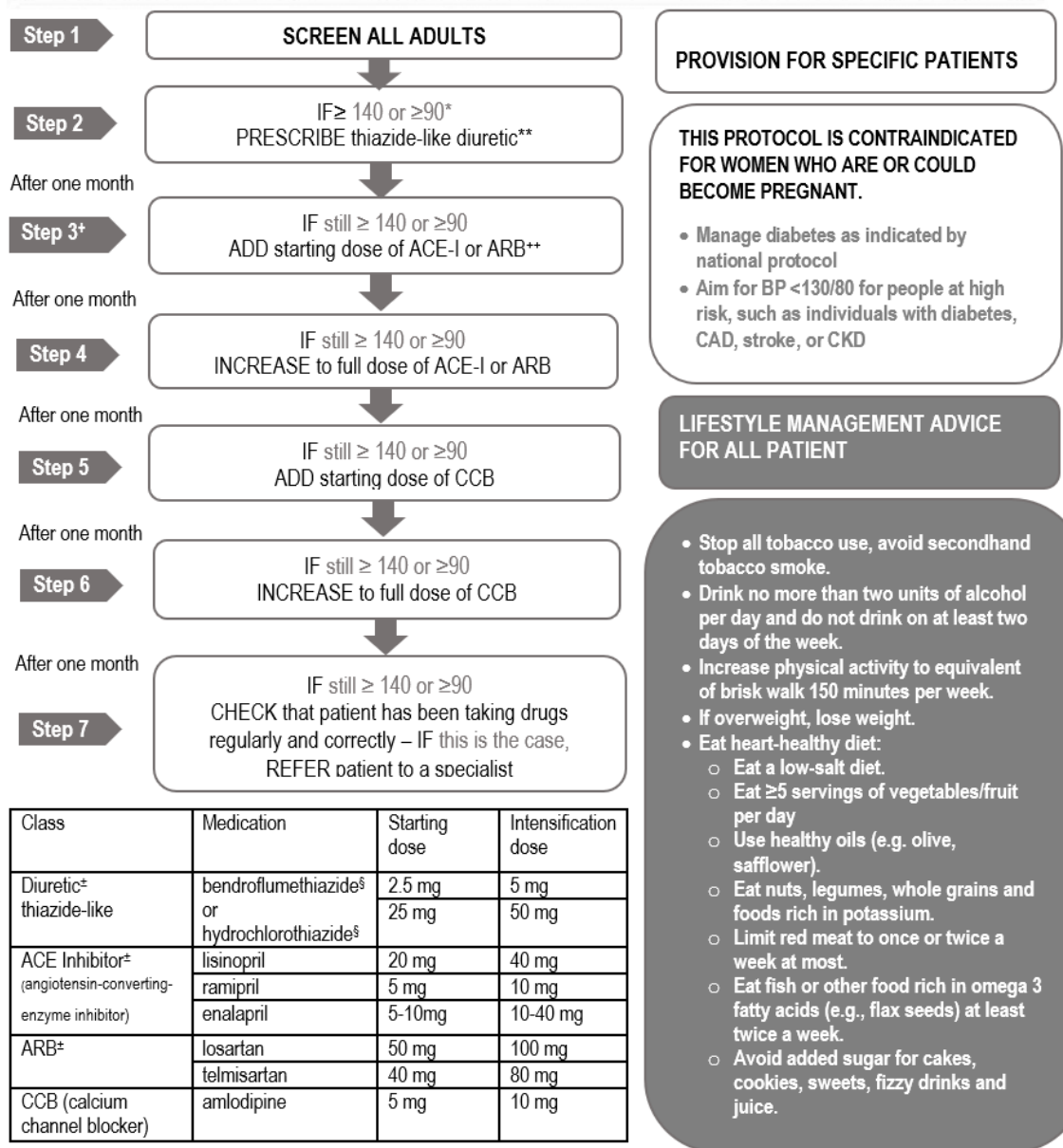
ARB- valsartan 40 mg twice daily (320 mg max, divided), telmisartan 40 mg (80mg max)

BB-bisoprolol 2.5mg (intensify by 2.5mg every 2-4 weeks, max 20mg), metoprolol 25-50 mg (100mg max), carvedilol 3.125-6.25 mg twice daily (50 mg max)

#### **Important considerations in pregnancy/breastfeeding**

- Chronic hypertension is a known risk factor for pre-eclampsia. For persistently elevated blood pressure in pregnancy (BP> 160/100), antihypertensives should be considered. Calcium channel blockers are generally acceptable to give in pregnancy but referral is indicated for these decisions.
- **ACE inhibitors and ARBs** are not recommended in pregnancy. It is therefore important to discuss family planning and contraception options, if indicated, with any female patient started on these medications.

EXAMPLE OF HYPERTENSION PROTOCOLS<sup>6</sup>  
**HYPERTENSION PROTOCOL**  
**Diuretic as first-line treatment**



\*Or other BP target, as determined by clinical factors. If BP  $\geq 160$  or  $\geq 100$ , start same day. If 140-159 or 90-100, check on a different day and if still elevated, start.

\*\*Consider statin use. Consider increase to intensification dose diuretic. Hypokalemia more common using intensification dose diuretic- consider increased lab monitoring.

**+Consider optional switch of steps 3 and 4 (ACE-I) with steps 5 and 6 (CCB).**

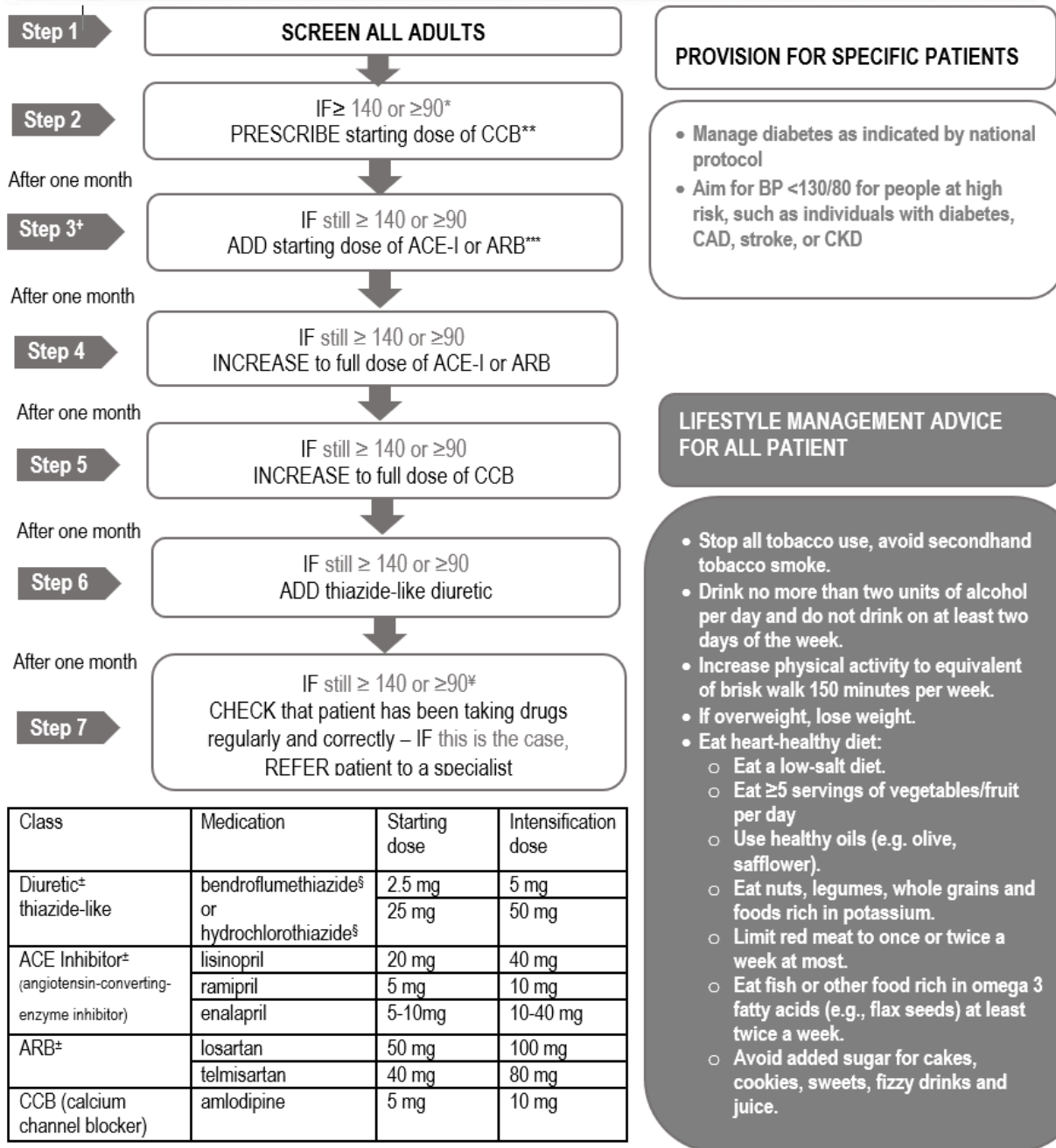
**++ACE-Inhibitors cause chronic cough in approximately 10% of patients. Neither ACE-I nor ARBs should be given to pregnant women.**

**±Before initiating and several weeks after starting ACE-Is, ARBs or diuretics, consider checking serum creatine and potassium.**

<sup>6</sup> Adapted from HEARTS Technical package for cardiovascular disease management in primary health care: evidence-based treatment protocols. Geneva: WHO; 2018.

# HYPERTENSION PROTOCOL

## CCB as first-line treatment



\*Or other BP target, as determined by clinical factors. If BP  $\geq 160$  or  $\geq 100$ , start same day. If 140-159 or 90-100, check on a different day and if still elevated, start.

\*\*Consider statin use. Consider increasing to intensification dose CCB before introducing ACE-I/ARB.

\*\*\* ACE-Inhibitors cause chronic cough in approximately 10% of patients. Neither ACE-I nor ARBs should be given to pregnant women.

<sup>+</sup>Consider optional switch of steps 3 and 4 (ACE-I) with step 6 (thiazide-like diuretic).

<sup>¥</sup>Consider increase to full dose diuretic. Hypokalaemia more common using full dose diuretic – consider increased lab monitoring.

<sup>±</sup>Before initiating and several weeks after starting ACE-Is, ARBs or diuretics, consider checking serum creatinine and potassium.

## 5.3 Essential components of diabetes treatment

### Glycaemic control targets:

FBG: <7 mmol/l (<126 mg/dl)

HbA1c: <7% ; more stringent target of <6.5% may be used in patients on lifestyle intervention only or metformin

-Consider less stringent target (e.g. <8%) if hypoglycaemic side effects occur, advanced complications or comorbidities, or limited life expectancy

**It is important to 1<sup>st</sup> categorize the diabetes as Type 1 or 2, insulin requiring or non-insulin requiring.**

**Type 1 diabetes** is a predominantly genetic or inherited condition of impaired insulin PRODUCTION by the pancreas. It usually first appears in infancy or childhood. As a result, ALL patients with Type 1 diabetes require insulin therapy, as their bodies cannot produce enough on their own, and therefore they have difficulties with blood glucose regulation.

**Type 2 diabetes** is predominantly a disease of insulin RESISTANCE, where the body does not respond to the insulin produced by the pancreas. Type 2 diabetes usually develops in adults, but can also appear in children and adolescents who are obese. Initially, Type 2 diabetes is usually treated with oral agents, but often patients will progress and require insulin therapy

### Patients require insulin if they:

- Develop diabetes when they are young (usually <25; patients between 25-35 years of age are also more likely to require insulin therapy)
- Have severe symptoms of hyperglycaemia (excessive thirst, excessive urination, significant weight loss) on initial presentation; insulin may be required temporarily.
- Have high blood glucose levels, usually > 15mmol/l
- Have ketones in the urine
- Are severely dehydrated
- Have concomitant severe infection; insulin may be required temporarily
- Are pregnant
- Have contra-indications to using oral hypoglycaemic agents (liver disease, allergy to the drugs, have medical conditions requiring tight control of glucose such as kidney disease)
- Peri-operative period especially major or emergency surgery

### Patients usually do not require insulin if they:

- Are older, usually > 35 years when they are diagnosed with diabetes
- Are asymptomatic or have mild symptoms of hyperglycaemia
- Have little or no weight loss
- Have elevated blood glucose often < 15.0 mmol/l
- Have no ketones in the urine
- Are not dehydrated

*If there is no doctor at the health centre, refer to district clinician if you suspect insulin may need to be started.*

### 5.3.1 Non-pharmacologic therapy

Patient needs to understand what diabetes is- use education box A11.

**Lifestyle modification** is an essential component of the comprehensive chronic care of all patients with diabetes. These interventions have been shown to improve outcomes.

Use the counselling and education boxes in Annex A to counsel on:

- heart healthy diet (A1) and additional principles of dietary management for patients with diabetes (A3). If the patient is obese, also use A7.
- increased physical activity (A5)
- tobacco cessation (A9) and reducing hazardous or harmful alcohol use (A10).

**Foot care and maintenance** is very important for diabetics. **Examine the feet on each visit.** Use the counselling box – A14 Advise on foot care for all diabetics to prevent wounds and ulcers.

### 5.3.2 Diabetes treatment protocol<sup>7</sup>

- Metformin should be used as a first-line agent in patients with type 2 diabetes who are not controlled by diet only and who do not have any contraindications (liver disease, renal insufficiency, hypoxia)
- Patients with contraindications to metformin or who are not meeting glycaemic targets, may start a sulphonylurea
- Some patients especially the elderly may develop attacks of hypoglycaemia when on oral hypoglycaemic agents (OHAs). Patients on OHAs must be advised on the symptoms and the treatment of hypoglycaemia (use counselling box A13) and should be monitored regularly to ensure safety of treatment.
- Patients who are asymptomatic for uncontrolled diabetes (absent excessive urination, thirst, weight loss, poor eyesight) and have no co-morbidities may be started on treatment at the primary health care level, first with diet and advice on increased physical activity.

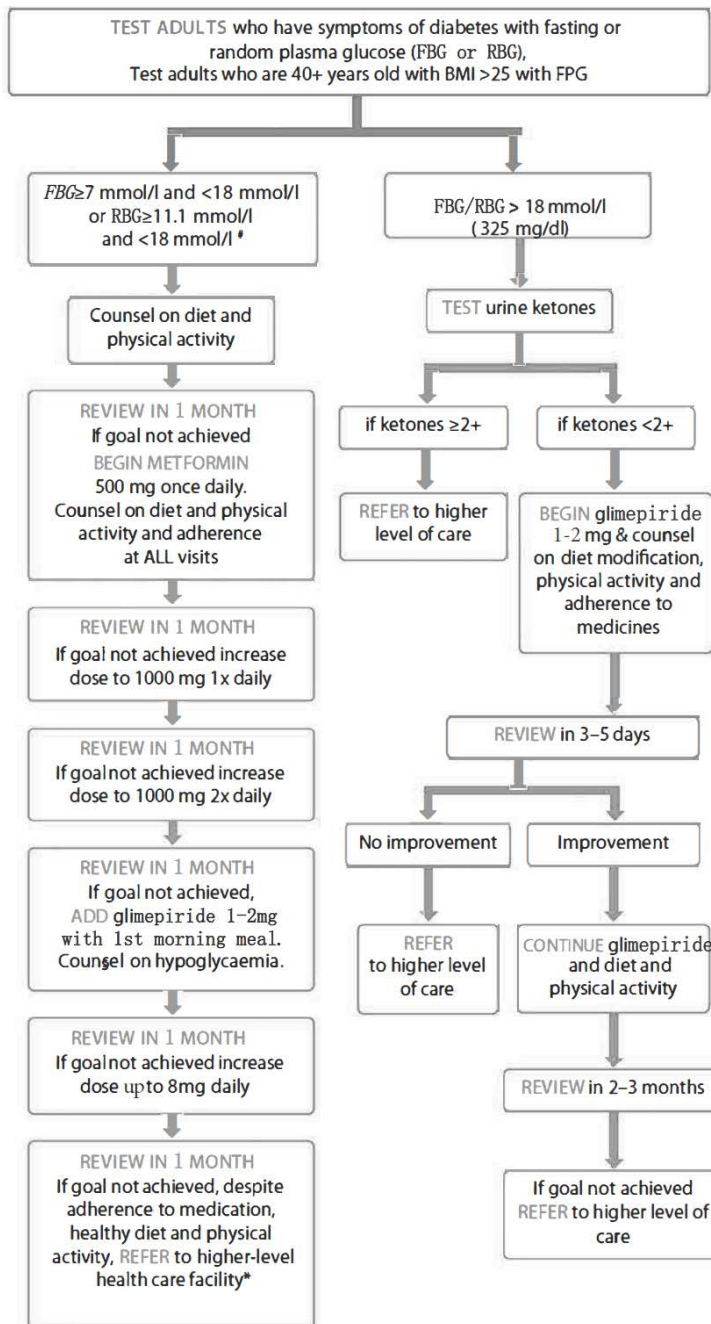
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<sup>7</sup> Adapted from HEARTS Technical package for cardiovascular disease management in primary health care: evidence-based treatment protocols. Geneva: WHO; 2018.



## DIABETES PROTOCOL

### Type 2 diabetes management protocol derived from WHO-PEN (27, 29)



19 February 2018

#### SCREENING FOR CHRONIC COMPLICATIONS

- Measure blood pressure at every scheduled visit, review medication as per hypertension protocol
- REFER for dilated-pupil retinal exam upon diagnosis, and every two years thereafter, or as per ophthalmologist recommendation
- Examine feet for ulcers at every visit. REFER to higher level of care if ulcer present
- Assess risk of lower limb amputation annually (foot pulses, sensory neuropathy by monofilament, presence of healed or open ulcers, calluses). REFER to higher level of care if ulcer present or pulse absent
- Test for proteinuria annually. REFER to higher level of care if positive.

#### MANAGEMENT OF ACUTE COMPLICATIONS

- Severe hypoglycaemia (plasma glucose <50 mg/dl or 2.8 mmol/l) or signs:
- If conscious, give a sugar-sweetened drink
  - If unconscious, give 20–50 ml of 50% glucose (dextrose) IV over 1–3 minutes.
- Severe hyperglycaemia (plasma glucose >18 mmol/l (325 mg/dl) and urine ketone 2+) or signs and symptoms of severe hyperglycaemia:
- Set up intravenous drip 0.9% NaCl 1 litre in 2 hours; continue at 1 litre every 4 hours, REFER to hospital.

Goal for glycaemic control	Plasma glucose**
Fasting	≤7.0 mmol/l (126mg/dl)†

- # refer to table on diagnostic values for other tests which can be used to diagnose diabetes.
- \* If they are more affordable than insulin, DPP4-inhibitors, SGLT2-inhibitors or pioglitazone can be used before insulin in cases of treatment failure with metformin and glimepiride. Introduce and titrate insulin treatment according to local practices.
- \*\* HbA1c should be used where available.
- † Consider less stringent glycaemic control in patients with frequent severe hypoglycaemia, advanced complications, serious comorbidities and/or limited life expectancy.

### Sulfonylurea oral glucose lowering agents with starting and escalating doses

Medication	Starting dose	Next dose if glucose target not met	Next dose if glucose target not met	Next dose if glucose target not met	Next dose if glucose target not met	Range of daily dosage (mg)
glibenclamide	2.5 mg	5 mg	10 mg	12.5 mg	15 mg	2.5-15
gliclazide controlled release	30 mg	60 mg	80 mg	160	320	30-320
glipizide						2.5-20
glimepiride	1-2 mg					1-8 (increase by 1-2mg in 1-2 week interval)

Step 3-Refer to next level of care if diabetes patient:

- Unable to meet glycaemic targets on metformin and sulfonylurea in addition to lifestyle changes
- Has any severe infection and/or foot ulcers
- Has recent deterioration of vision or no eye exam in 1 year or any other diabetes complication

Follow up and monitoring of patients on pharmacological treatment should be every 3 months for patients with diabetes if stable. If add a new medication or change a dose, follow-up should be within 1 month if possible.

### 5.3.3 Insulin therapy

Insulin is the treatment of choice in young people with diabetes mellitus. It, however, should also be used, either in combination with OHAs or as a monotherapy in the management of older people with poorly controlled diabetes, so as to achieve optimum treatment targets. Delaying insulin therapy in this group increases the risk of diabetes-related complications. ***Patients who are identified as in need of initiation of insulin therapy for long term therapy usually need to be referred to HC4 or general hospital for initiation of insulin, but then can be followed in the health centre.***

*At general hospital, the clinician will initiate insulin as follows:*

The regimen and dose of insulin therapy vary from patient to patient\*.

1. SUPPLEMENTAL THERAPY: Intermediate (NPH) insulin administered at 22h00 given at a Total Daily Dose calculated by:  $\text{Kg} \times 0.2 \text{ IU}$  of insulin (e.g. 70 kg patient  $\times 0.2 \text{ IU} = 14 \text{ IU}$  insulin). The OHAs are continued (half maximum dose of sulfonylureas and metformin up to maximum dose of 2 g/day) and the blood glucose levels are monitored (when possible). This guideline on dosage is only applicable if the patient has normal kidney function.
2. SUBSTITUTION THERAPY: OHAs are discontinued (unless the patient is obese where the METFORMIN will be continued\*\*), and a PRE-MIXED insulin is introduced TWICE DAILY. Start at a dosage of 0.2 IU/kg body weight. May increase to 0.5 IU/kg body weight and this is split into:  $\frac{2}{3}$  in the morning and  $\frac{1}{3}$  in the evening: 30 minutes before the morning and the evening meals.

\*If the requirement of insulin exceeds 30 units/day, referral to a specialist should be considered.

\*\* Metformin should be continued as it has been shown to reduce cardiovascular events and all-cause mortality in overweight patients with diabetes.

*The patient on insulin who returns to Chronic Care clinic at health centre level for follow-up will need education, monitoring and support of patients:*

- Patients on insulin therapy who attend chronic care for follow up and monitoring must be advised on the following:
  - Risks of hypoglycaemia associated with exercise, change in dietary pattern (eg skipping meals, fasting) and sickness particularly associated with vomiting and diarrhoea.
  - Symptoms of hypoglycaemia include: irritability, shakiness, excessive sweating, hunger, headache and cold clammy hands, dizziness, blurry vision and can progress to confusion and unconsciousness.
    - Advise patients on what to do should they experience symptoms suggestive of hypoglycaemia- eat sugar or sweets immediately. If at health centre, provide acute care-Section 4 :
  - Insulin storage and injection techniques
    - Insulin in current use can be stored at room temperature 20-25 °C (for a maximum on 6 weeks after initial use and within expiry date). If temperatures

higher than 30°C, then use within 4 weeks. Store unopened insulin in refrigerator 2-8°C.<sup>8</sup>

- The injection sites commonly used are the abdomen, the outer thigh, and buttocks. One area should be used as the site for the day and then rotated for next injection e.g the abdomen may be used in the morning and then the thigh the next day.

### Time course of action of insulin preparations

Insulin preparation	Onset of action	Peak action (hours)	Duration of action (h.)	Injections per day
Rapid-acting analogues	10 - 20 minutes	1 - 2	3 - 5	Immediately before meals
Short-acting	30 - 60 minutes	2 - 4	6 - 8	30 min. before meals
Intermediate (NPH)	1 - 2 hours	5 - 7	13 - 18	Once or twice
Long-acting	1 - 3 hours	4 - 8	13 - 20	Once or twice
Biphasic mixture (30/70)	30 minutes	2 - 8	up to 24 hours	Once or twice

#### Important considerations in pregnancy/breastfeeding

- Poor glucose control in women who are diabetic and pregnant puts the mother and foetus at risk for complications. Women who are of childbearing age with diabetes should be counselled on the importance of glycaemic control prior to becoming pregnant. Management of diabetes in pregnancy can be difficult so referral is important.
- **Insulin**- if pregnant, insulin is generally preferred to treat diabetes with regular monitoring of blood glucose but management can be complex and should be done at a higher level of care. Breastfeeding mothers need regular monitoring of blood glucose - at least twice a day until stable when blood glucose checks may be reduced to less frequent checks e.g. once a week.

<sup>8</sup> Bahendeka et al. EADSG guidelines: Insulin storage and optimization of injection technique in diabetes management. *Diabetes Ther.* 2019. 10:341-366. <https://doi.org/10.1007/s13300-019-0574-x>

## 5.4 Pharmacological treatment for primary and secondary prevention for cardiovascular disease

The use of these medications for primary prevention has been shown to reduce the risk for cardiovascular events in certain settings. For primary prevention, consult national guidelines. It is also always important to consider the risks vs benefits of the medications for each individual patient.

For secondary prevention for CVD (after stroke or MI, TIA, or chronic kidney disease), it is important to have patient evaluated by specialist or trained clinician from the hospital to make a treatment plan that is appropriate for the patient.

### Aspirin- daily low dose

- Low-dose aspirin use has been shown to reduce the risk for cardiovascular events (non-fatal MI and stroke) in adults who are at high CVD risk in high income countries.
- If prior MI or transient ischaemic attack/stroke (ischaemic, not haemorrhagic), consider daily low-dose **aspirin**:
  - For prevention of recurrent CVD event (secondary prevention)
- Dose: 75 mg daily
- Side effects: Aspirin use has been associated with gastrointestinal (GI) bleeding and haemorrhagic stroke so it is important for health worker to consider the risk vs benefit of initiating aspirin therapy.

### Statins<sup>9</sup>

- Consider statin:
  - if patient is a diabetic over 40-75 years
  - for **elevated cardiovascular disease risk  $\geq 30\%$  (primary prevention)**.
  - for patients with a history of myocardial infarction or stroke (secondary prevention). For patients with documented dyslipidemia, see section 6.1.
- Dose of statins such as atorvastatin is 10-40 mg daily at bedtime. The risk versus benefit of statin use in patients should always be reviewed for the individual patient.
- Side effects: muscle pain or damage, liver problems, skin flushing, dizziness and confusion.

### Antihypertensives for secondary prevention

- Beta-blocker and ACE inhibitor are recommended for patients with history of MI, particularly with those who have developed left ventricular dysfunction. These medications have been shown to reduce mortality and prevent recurrence in post-MI patients.

### Pharmacologic assistance in stopping smoking

- Encouraging patients to stop smoking may be considered the single most important action that they can do to prevent cardiovascular disease.
- Asking about smoking at every visit will show the patient that the health team is serious about smoking and its effects on the patient's health.

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<sup>9</sup> Recommendations are based on substantial evidence from high income countries in prevention of ischemic heart disease and stroke.

- Smoking cessation assistance can be done successfully by a team approach. The health worker at triage can ask about tobacco use, the clinical health worker can assess and provide targeted counselling message and assistance with treatment if available and the auxiliary worker/expert patient/health educator can help with counselling.
- Use strong, clear counselling messages to assist in smoking cessation (use the 5A's)—See A10
- If smokers are not able to quit with counselling, the health worker can consider prescribing nicotine replacement therapy or medicines such as amfebutamone (bupropion) to assist motivated smokers. These medicines help by reducing the craving for cigarettes.
  - Amfebutamone (bupropion)-150 mg daily for 3 days, then twice per day for 7-12 weeks; start treatment 1-2 weeks before quit date. Avoid in patients with seizure disorders or history of head trauma. May cause dry mouth, headache, tremors, nausea, anxiety, and insomnia. Most of these side effects get better with continued use.

## 5.5 Patient preparation, education and support for treatment

- It is important for the patient to identify/acknowledge that they have hypertension or diabetes or elevated CVD risk and that enrolment into chronic care means that they will need to come for regular follow-up, not just for new symptoms or problems
- A decision should be made on who else should know and why (e.g. family member, employer, responsible adult, school). This disclosure may be helpful with treatment adherence to treatment or support for lifestyle changes.
- Patient education is one of the cornerstones of management together with diet, physical activity and pharmacotherapy, and is critical in improving the outcome.
- Counsel using the 5 A's to prepare and support adherence to treatment

### Prepare for treatment: adherence preparation support and monitoring

<b>Assess</b>	<ul style="list-style-type: none"> <li>❖ Patient's goal for today's visit</li> <li>❖ Understanding of hypertension, diabetes or elevated CVD risk treatment plan(s)               <ul style="list-style-type: none"> <li>• Meal planning- decreased salt diet if hypertensive, low sugar diet if diabetic, carrying snacks if diabetic</li> <li>• Weight loss if overweight</li> <li>• Increased physical activity and exercise</li> <li>• Medications to be taken and how they are taken</li> <li>• Cessation of smoking and other uses of tobacco</li> </ul> </li> </ul>
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<b>Advise</b>	<ul style="list-style-type: none"> <li>• Hypertension and/or diabetes is a progressive condition and can lead to serious complications if BP or blood sugars are not controlled.</li> <li>• For CVD risk: Cardiovascular disease risk level that has been calculated is the probability of developing a heart attack or stroke over 10 years. Your risk level is calculated in a percent and whether this is low, moderate or high.</li> <li>• Lifestyle changes are important.</li> </ul>
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<b>Agree</b>	<ul style="list-style-type: none"> <li>❖ Establish that the patient is willing and motivated to follow the treatment plan of diet changes, increased physical activity and medications prescribed               <ul style="list-style-type: none"> <li>• Has the patient demonstrated reliability to keep appointments, to adhere to other medications?</li> <li>• Has the patient disclosed his or her condition to others? If not, encourage him or her to do so.</li> </ul> </li> </ul>
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<p><b>Assist</b></p>	<ul style="list-style-type: none"> <li>❖ Help the patient develop the resources / support / arrangements needed for adherence: <ul style="list-style-type: none"> <li>• Ability to come for the required schedule of follow-up every 3 months once stable target blood pressure is achieved. Earlier follow-ups e.g. 1 month may be required with starting an initial medication or if not at target goal yet. Discuss how the patient will do this. (Do you live close to here? If not, how will you manage to come for the scheduled appointments?)</li> <li>• Home and work situations that permit the appropriate meal planning, physical activity and exercise.</li> <li>• Maintain a patient log book which includes BP, blood sugar measurements and treatment plan</li> <li>• Discuss adherence to medications. Are there problems in remembering to take the medicines? Discuss strategies to help remember to take the pills-pill boxes, alarms, family. In prescribing medications, single daily dose regimen is preferable.</li> </ul> </li> <li>❖ If medication side effects: <ul style="list-style-type: none"> <li>• Clarify how much of each medication patient is taking</li> <li>• On hypertension medications, does the patient complain of feeling dizzy? If signs of postural hypotension, reduce the medication dosage or change medication class if not at BP target.</li> <li>• On diabetic medications, does the patient feel shaky, sweaty or clammy? Encourage them to carry sugar snacks and to eat meals regularly while on medication.</li> </ul> </li> </ul> <p style="text-align: center;"><b>Keep a record of discussion/plan to facilitate follow up</b></p>
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<p><b>Arrange:</b></p>	<ul style="list-style-type: none"> <li>❖ Follow up visits</li> <li>❖ How to get help between visits if problems</li> <li>❖ Connect with community health worker/expert patient support in the community as available.</li> </ul>
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## 5.6 Summary of key indicators of treatment response or disease severity

The goal of treatment of patients with hypertension is for control of blood pressure. The goal of treatment of patients with diabetes is to achieve as near normal blood glucose as possible, control of blood pressure and reduction in blood lipids (cholesterol) where necessary. Achieving these goals reduce and/or delay the risk of developing complications associated with these conditions.

Table 4 shows the desirable targets for optimal control for blood glucose, blood pressure, body weight and lipids.

Indicator	When to Check	Optimum Targets
Blood pressure in nondiabetic	Every visit	SBP < 140; DBP < 90
Blood pressure in diabetic or patients with CVD risk $\geq 30\%$ or PCVD	Every visit	SBP < 130; DBP < 80
BMI	Every visit	BMI- 18.5-24.9
Fasting blood glucose in diabetics	Initial and annual for all Diabetics- every scheduled visit. If not scheduled, then do casual (random) blood glucose	FBG: 4-7 mmol/l (70-126 mg/dl) RBG: <10 mmol/l (<180 mg/dl) 2 hours after a meal
HbA1c in diabetics	6 monthly (if available)	< 7.0 % (consider more stringent control <6.5% in certain patients)
Lipids	Annually (if available)	Total cholesterol <5 mmol/l (190 mg/dl)
Physical activity	Every visit	30 minutes X 5 days/week or 150 minutes per week
Tobacco use	Every visit	Smoking cessation
Alcohol consumption	Every visit	Reduce to less than 2 units per day. <i>Note: there is no global consensus on the safe limits of alcohol intake. Alcohol intake during pregnancy is not recommended. If daily or heavy drinking (6 or more drinks on a given occasion) or concerned about alcohol use, see A10.</i>

- At each visit, health care workers must look at results and review the trends of test and observations that are taken.
  - Review urine results- if ketones 2+, refer. If proteinuria, stop diuretic and nephrotoxic drugs e.g. NSAIDs. Control risk factors and obtain serum creatinine if available. Consider ACE Inhibitor (see **Section 7.2.2**). Repeat urine test on next visit. If still with proteinuria, referral for comprehensive assessment and laboratory tests will be needed (serum creatinine, potassium)
- In patients who do not achieve treatment targets of blood pressure, lipid and weight and/or develop complications such as chronic kidney disease, initial evaluation/management should be done at the level of chronic care and subsequently referred to higher care facility for modification of management (counselling and drug therapy).

## 6. RECOGNISE AND MANAGE CO-MORBID CONDITIONS AND COMPLICATIONS

### 6.1 Manage co-morbid conditions (obesity, dyslipidaemia) to reduce CVD risk

#### Obesity

- Both generalized and abdominal obesity (central obesity) are associated with increased risk of morbidity and mortality.
- Body Mass Index (BMI) is generally the chosen indicator to measure body size whereas waist circumference (WC), waist-hip ratio or waist-height measure are useful in the measure of abdominal fat.
- The latter measures have been suggested as being superior to BMI in predicting CVD risk.

Increased visceral fat tissue is associated with the following:

- Decreased glucose tolerance
- Reduced insulin sensitivity
- Adverse lipid profiles

- Determine central fat distribution by measuring waist circumference (Do not measure in pregnancy).
- Waist circumference (WC) should be measured midway between the lower rib margin and the iliac crest-see A4

### How to measure waist circumference (to the nearest 0.5 cm)

1. Ask patient to stand with feet close together, arms at the side and body weight evenly distributed.
2. Tell the patient to be relaxed and take measurement at end of natural breath.
3. Measure at the midpoint between the lower margin of the least palpable rib and the top of the iliac crest, at a level parallel to the floor.
4. Use a stretch-resistant tape that is wrapped snugly around the patient, but not to the point that the tape is constricting.
5. Repeat measurement twice; if the measurements are within 1 cm of one another, calculate the average. Repeat measurement if the difference between the two measurements exceeds 1 cm.

- Waist circumference is considered elevated in women  $\geq 88$  and men  $\geq 102$ cm (cut offs for adaptation)
- Combined recommendations of BMI and WC cut-off points made for overweight or obesity and association with disease risk

	BMI	Obesity class	Disease risk (relative to normal weight and waist circumference)	
			Men < 102 cm Women < 88 cm	Men > 102 cm Women > 88 cm
Underweight	<18.5			
Normal	18.5-24.9			
Overweight (pre-obesity)	25.0-29.9		Increased	High
Obesity	30.0-34.9	I	High	Very high
	35.0-39.9	II	Very high	Very high
Extreme obesity	>40.0	III	Extremely high	Extremely high

- If elevated, advise weight loss through reduction in food/caloric intake and increasing physical activity (A4).

### Dyslipidaemia

- Total cholesterol and/or a lipid profile should be checked annually (if available) for patients with diabetes or hypertension
- Individuals with total cholesterol  $\geq 8$  mmol/l (320 mg/dl) should be counselled on dietary management (A3) and started on a statin e.g. atorvastatin 5-40 mg orally at bedtime.
- Consider **statin** to individuals with intermediate cardiovascular risk and total cholesterol  $\geq 5$  mmol/l despite lipid lowering diet
- Add statin for high cardiovascular risk (>30%) or diabetics who are 40 years and older (primary prevention)-see section 5.4

## 6.2 Recognise and manage complications

Complications in hypertension and diabetes can be similar e.g. cardiovascular (angina, heart failure, claudication, stroke), kidney disease (nephropathy), eye complications (e.g. retinopathy). Other complications may be more specific to diabetes e.g. diabetic foot and ulceration (deformities and chronic wounds), gastrointestinal complications, (recurrent constipation or diarrhoea, vomiting) skin-recurrent boils or rashes and neurological problems.

*For each visit, assess the patient by clinical review of symptoms and signs that may suggest organ/system complications.*

- For baseline visit and each subsequent visit, assess the patient by clinical review of symptoms and signs that may suggest that they have developed these complications (Ask and look).
- Always ask and record whether patient is a smoker – smoking worsens many of the complications. Support patients who are smokers to stop the habit through education and counselling.
- Always review previous records including blood pressure, blood glucose, urine (and HbA1c where available) levels in the past; complications are more likely in patients with poor control of diabetes and/or hypertension

### 6.2.1 Neurological complications

- Nerve disease may manifest with pain (patients describe burning like fire, pins and needle sensation) numbness, or weakness of the affected limbs.
- Sometimes the patients may report dryness of the skin or abnormal sweating
- Occurs more often in patients with poorly controlled diabetes, long duration with diabetes and poor nutritional support.

Ask	Look
<ul style="list-style-type: none"> <li>• Smoking habits</li> <li>• “Pins and needles” numbness or burning in feet often worse at night</li> <li>• Burning sensation of the body/ pain in the thighs</li> <li>• Diarrhoea at night?</li> <li>• Failed erection/sexual intercourse</li> </ul>	<ul style="list-style-type: none"> <li>• Weakness of limbs with altered gait or walking style</li> <li>• Wasting of a limb or limbs</li> <li>• Abnormal sensation/loss of sensation</li> </ul>

Check:

- Duration of symptoms
- Level/degree of disability or dependence of family members for assistance on activities of daily living e.g. feeding, walking, bathing, toileting, sleep and communication
- Medications that the patient may be taking e.g. d4Tor other comorbidities such as HIV-some ARVs can cause neuropathy.

Do:

- BP
- Random blood glucose (RBG)
- Advise on importance of glucose control.
- May try ibuprofen or paracetamol. If no relief, consider amitriptyline or carbamazepine:

Amitriptyline- start with 25 mg dose at night, can increase to 50 mg. Carbamazepine 100 mg twice daily. See IMAI-PEN Acute Care page 95.

- Refer to next level of care if glucose continues to be uncontrolled

## 6.2.2 Cardiovascular and cerebrovascular complications

- The heart and blood vessels are some of the most commonly affected systems in the body of one who has had diabetes or hypertension over a long time.
- The heart may be involved in several ways but ultimately manifest as heart failure. The manifestations are angina, myocardial infarction (heart attack) and heart muscle disease (cardiomyopathy).

ASK	LOOK
<ul style="list-style-type: none"> <li>• Chest pain – left sided chest pain/discomfort especially on exertion</li> <li>• Breathlessness/inability to lie flat</li> <li>• Cough associated with breathlessness</li> <li>• Exercise intolerance – below usual/previous abilities of work capacity</li> <li>• Easy fatigability</li> <li>• Weakness on one side of body</li> <li>• Poor memory</li> <li>• Disordered or altered speech</li> </ul>	<ul style="list-style-type: none"> <li>• Swollen feet/ legs</li> <li>• Breathlessness</li> <li>• Congested neck veins</li> <li>• Swollen abdomen tender right upper quadrant</li> <li>• Chest signs of congestion</li> <li>• Loss of body function- weakness of limbs, difficulty walking</li> <li>• Difficulty speaking</li> <li>• If signs of memory problem, look for Dementia: tell patient you want to check his memory. Name three unrelated objects clearly and slowly, ask patient to repeat them immediately (registration problem). If yes, wait five minutes then ask: “can you repeat the three objects?” (Recall problem).</li> </ul>

- Do:
  - BP and pulse measurements
  - RBG
  - Urinalysis for proteins
- Give:
  - If breathless, IV furosemide 40 mg, then refer to the next level of care
  - If concern for new onset cardiac chest pain, give aspirin (300 mg, chewed) and refer urgently. Continue with 75 mg aspirin daily.
  - Refer if new onset weakness or loss of function

### 6.2.3 Diabetic foot and ulceration

- Patients with poor sensation, poor vision, blood vessel disease, cigarette smokers and long duration of diabetes are more likely to develop foot problems.
- The diabetic foot:
  - initially has poor sensation
  - poor muscle function can cause deformities- claw-toes, valgus deformity of the big -toe, crowding of toes and stiff joints
  - calluses may form in areas exposed to pressure of ill-fitting footwear.
  - foot ulceration may then arise from minor trauma from inappropriate footwear or trauma to the foot from external sources. Foot ulceration is more likely if there is poor blood supply. This is more common in smokers.

ASK	LOOK
<ul style="list-style-type: none"> <li>• Pain or loss of sensation of feet/limbs</li> <li>• Presence of sores/wounds/blisters on the feet</li> <li>• If feet feel cold</li> <li>• Changes in foot colour</li> </ul>	<ul style="list-style-type: none"> <li>• Deformities of the feet e.g. claw-toes, big toes with valgus deformity</li> <li>• Stiffness of joints of the feet/ankle</li> <li>• Callus on the pressure areas of the feet</li> <li>• Interdigital fungal infections</li> <li>• Cuts on bottom of foot</li> <li>• Itchy skin rashes of the feet or eczema</li> <li>• Appropriateness of footwear               <ul style="list-style-type: none"> <li>○ Exposed nails in the inner shoe?</li> <li>○ Poor fit?</li> </ul> </li> <li>• Foot ulceration</li> <li>• Wounds with bad smell</li> <li>• Purulent discharge</li> <li>• Colour changes (black discoloration)</li> <li>• Cold areas</li> </ul>

- Do
  - Reinforce good self-care practices of foot care including daily inspection of feet and use of appropriate foot wear.
  - Counsel on cessation of cigarette smoking
  - Check pin-prick sensation
- If foot ulcer or abscess or black or cold areas present
  - Evaluate ulcer- location, size, shape, depth, and border.
  - Use a sterile stainless steel probe to assess for sinus tracts and to determine if wound probes to a tendon, joint or bone
  - Check for purulent drainage, redness, or odour
  - Check blood glucose
  - Check foot pulses
  - Do blood pressure measurement
  - Treatment of wound includes debridement (remove necrotic tissue, peri-wound callus and foreign body down to viable tissue), offloading (advise to halt weight bearing on affected foot), and infection control
  - Clean and dress
  - Start antibiotics (penicillin based) ± metronidazole orally

Refer to the next level of care as soon as possible especially if abscess or deep infection or spreading infection; infection of bone (osteomyelitis); gangrene (blackened tissue) or pain at rest; joint pain and swelling (possible septic arthritis); infection that is not responding to treatment after 1 week; unable to palpate foot pulses

## 6.2.4 Eye complications

- The eye is often involved in diabetic or hypertensive complication especially in patients with poor BP or glycaemic control. The retina is a common site of involvement for both, causing retinopathy, and the lens can be affected by diabetes as well and lead to cataracts.
- Cataracts or retinal disease often culminate in poor vision or total visual loss.
- Ask about visual problems annually.
- Screen for diabetic retinopathy by an ophthalmologist when diabetes is diagnosed and every year

ASK	LOOK
<ul style="list-style-type: none"> <li>• Poor/deteriorating vision in any eye</li> <li>• Double vision</li> <li>• Headaches</li> <li>• Tearing eyes</li> <li>• Redness of eyes</li> </ul>	<ul style="list-style-type: none"> <li>• Extent of visual loss/visual disability</li> <li>• Evidence of cataract</li> <li>• Corneal opacities</li> <li>• Evidence of redness/conjunctival infection</li> </ul>

- Do
  - Basic eye examination to ascertain visual function-use Snellen chart
  - Do BP examination
  - Do blood glucose
  - Refer to the next level of care if poor or deteriorating vision and for retinal exam by an ophthalmologist every year

## 6.2.5 Skin problems

- Injection sites complications are usually a result of poor injection techniques
- Other complications of diabetes that develop on skin are recurrent boils or rashes, recurrent vaginal itchiness

ASK	LOOK
<ul style="list-style-type: none"> <li>• Wounds</li> <li>• Vulval itching</li> <li>• Vaginal discharge</li> </ul>	<ul style="list-style-type: none"> <li>• Injection site-signs of infections, changes in fat distribution and scarring of skin</li> <li>• Boils/rashes</li> <li>• Abscesses</li> </ul>

- Do:
  - Local treatment or oral antibiotic if needed.
  - If vulval itching or vaginal discharge

Use this table in all women with **abnormal vaginal discharge**:

<b>SIGNS:</b>	<b>CLASSIFY AS:</b>	<b>TREATMENTS:</b>
<ul style="list-style-type: none"> <li>• Itching or</li> <li>• Curd-like vaginal discharge</li> </ul>	<b>CANDIDA VAGINITIS</b>	<ul style="list-style-type: none"> <li>• Treat with nystatin.</li> <li>• Return if not resolved (p. 72).</li> <li>• Consider HIV-related illness if recurrent (p. 57).</li> <li>• Consider diabetes if recurrent</li> </ul>
<ul style="list-style-type: none"> <li>• None of the above</li> </ul>	<b>BACTERIAL VAGINOSIS (BV) OR TRICHOMONIASIS</b>	<ul style="list-style-type: none"> <li>• Give metronidazole 2 gm PO single dose.</li> <li>• Follow up in 7 days if not resolved (p. 72).</li> </ul>

- Refer to the next level of care if signs of worsening abscess/infection



## 6.2.6 Kidney disease

- Kidney disease or nephropathy is one of the most serious complications of diabetes or hypertension and is a result of poor glucose or BP control over long duration. Usually the patient has no obvious symptoms, therefore HCWs need to carry out urinalysis for evidence of persistent proteinuria.

ASK	LOOK
<ul style="list-style-type: none"> <li>• Swollen/puffiness of the face</li> <li>• Swollen face</li> <li>• Fatigue</li> <li>• Altered urinary habits like frequency or reduction in urine output</li> </ul>	<ul style="list-style-type: none"> <li>• General health status, pallor</li> <li>• Puffiness of the face</li> <li>• Swollen feet</li> <li>• Other complications of diabetes</li> </ul>

- Do
  - Measure BP
  - Measure blood glucose
  - Urinalysis -if urine protein present, repeat urine dipstick.
  - If still with proteinuria, try to stop any potentially offending medications e.g. NSAIDs, aminoglycoside antibiotics and repeat.
  - Measure haemoglobin, serum creatinine and potassium (if able).
  - Send to the next level of care if reduced urine output, persistent proteinuria or abnormal laboratories

## 6.2.7 Gastrointestinal complications

- Patients with diabetes for a long time, and poorly controlled glycaemia are more likely to develop gastrointestinal symptoms. The complications are often subtle and non-specific.
- The symptoms resemble usual diseases that cause abdominal discomfort, episodes of vomiting or constipation.

ASK	LOOK
<ul style="list-style-type: none"> <li>• Abdominal pain/discomfort</li> <li>• Poor feeding</li> <li>• Weight loss</li> <li>• Vomiting</li> <li>• Constipation (recurrent)</li> <li>• Diarrhoea, especially at night</li> </ul>	<ul style="list-style-type: none"> <li>• Wasting, pallor</li> <li>• Obvious signs of other diabetic complications</li> <li>• Abdominal tenderness</li> <li>• Abdominal distention.</li> </ul> <p>*It is important to note that these symptoms and signs are non-specific for diabetes and should also be further evaluated.</p>

- Do:
  - Blood pressure
  - RBG
  - Urinalysis
  - Stool-ova and cysts/microscopy
  - Symptomatic treatment.
  - Refer to the next level of care

## 6.2.8 Erectile dysfunction (ED)

- ED can occur from many causes-local penile factors, vascular, neurologic, hormonal, drug induced, and psychogenic. For erections to occur, men need to have functioning arterial blood flow and nerve pathway. Conditions such as DM can affect both, and hypertension affects circulation. Poorly controlled blood sugar levels can damage small blood vessels and nerves. Damage to the nerves that control sexual stimulation and response can make it difficult for a man to achieve an erection firm enough to have sexual intercourse. Reduced blood flow from damaged blood vessels can also contribute to ED.
- Medications such as thiazide diuretics used for hypertension can also contribute to ED so it is important to assess patients with a thorough history.

ASK	LOOK
<ul style="list-style-type: none"> <li>• Sexual history- partners, history of rashes, infections, trauma</li> <li>• Onset, ability to maintain erection, nocturnal erections?</li> <li>• Depression- see A17</li> <li>• Medications</li> </ul>	<ul style="list-style-type: none"> <li>• Genital rash, penile lesions or discharge from penis</li> <li>• Hair growth-lack or loss of normal growth</li> <li>• Small testes</li> <li>• Gynecomastia- enlarged breast in men</li> <li>• Check femoral pulse</li> </ul>

- Clinical signs may indicate possible causes. Rapid onset of ED may be due to psychogenic or genitourinary trauma, non-sustained erection from anxiety or complete loss of nocturnal erections from vascular or neurologic disease.
- Do:
  - Control blood sugar and BP
  - Reduce alcohol consumption
  - Stop smoking
  - Encourage physical activity
  - Sleep more and reduce stress
  - Try different antihypertensive if on thiazide diuretic or beta blocker (ED less common)
  - Treat depression
  - Check other labs if possible e.g. HbA1c, thyroid, testosterone
  - There are medications that can be purchased for ED if available
  - Counsel if suspect household violence

## **7. Dispense medication, schedule follow up and record date**

### **7.1 Train patient to use/review how patient is using medication. Make sure patient understands:**

- 7.1.1 How to take the medication
- 7.1.2 The reason for the medications
- 7.1.3 The difference between medicines if on multiple medications
- 7.1.4 Appropriate dosage and how many times a day to take the medications
- 7.1.5 Check the patient's understanding before the patient leaves the health centre
- 7.1.6 Explain the importance of keeping an adequate supply of medications and to return to health centre before the medicines run out
- 7.1.7 Explain the need to take the medicines regularly even if the patient feels well
- 7.1.8 Explain what to do for common side effects of medicines and when to seek care

### **7.2 Dispense medication according to treatment plan (record)**

### **7.3 Arrange follow up clinic visit and/or referral**

### **7.4 Manage defaulters – link to community care**

## HOW TO FILL OUT THE NCD PATIENT CARD: DIABETES, HYPERTENSION or ELEVATED CARDIOVASCULAR RISK

A patient card allows the health care team at the facility keep track of all care, treatment and follow-up (clinical, lifestyle interventions and psychosocial) over time in one place. This card provides quick access to important information and allows for communication of the patient's clinical status within the health care team and therefore ensure continuity of care.

The front of the card is the **front summary page** that includes key patient information including demographic and contact data, patient medical history and complications, comorbidities, follow-up status, and important data collected on a three- and 12-monthly basis and any hospitalizations. The inside **encounter pages** is where the health worker fills information during a clinical visit – one row per visit – often using short-hand codes listed in boxes at the bottom of the second encounter page. Some of this information will also be transferred to the summary page (e.g. updated complications, follow-up status). Photocopies of this page may be used and inserted as they are filled up. Each page is able to accommodate 16 visits (number of rows). The **back follow-up page** consists of key education and counseling interventions that are necessary for patient follow-up. There are three sections (1 education basics and healthy lifestyle; 2 treatment preparation and ongoing support and monitoring; and 3 home-based care and support) and multiple columns where brief notes may be written for future follow-up. Only relevant parts of this section will be completed at each visit.

### Instructions for filling in the form:

1. Fill in top of card- district, health unit, enrolment date, cohort year, national ID and NCD ID nos. Next fill in the patient's name, age, sex, date of birth, address, supporter information, and community health worker information (if available). This can be done by any member of the health care team at initiation and update as needed.
2. Fill in patient overview box. Tick the diagnosis at enrolment and update as needed. Tick prior CVD if a patient has had a history of heart attack, angina, stroke, or TIA. Record family history. Tick premature cardiovascular disease (CVD) if heart attack or stroke in 1<sup>st</sup> degree relative- male < 55 years, female <65 years. Fill in medical comorbidities or complications at enrolment and update over time.
3. Fill in drug allergies, including the reaction that occurs with the drug allergy.
4. Fill in the medications that the patient is taking.
5. Fill out for any specialty referrals or hospitalizations that may have occurred with the patient. It is important to include reason for referral, diagnoses, and pertinent labs or investigations that occurred.
6. Fill out any labs that may have come with the patient at the initial visit, given to you by the laboratory or that you have obtained through point of care testing.
7. Turn the page to the encounter pages, fill out visit date. If patient has been referred to the health centre from another facility or the community, information may be filled out in the first encounter row and indicate "referral" or "transfer in" to the left of the visit date. If scheduled follow-up visit, tick box.
8. Fill in patient height in box, weight on encounter line and calculate BMI and write below weight on same encounter line. Circle BMI if obese category.
9. Record blood pressure measurements (two readings) and the blood glucose (fasting preferred).
10. Record patient's response to questions about tobacco, physical activity and alcohol use. The rest of this page can be filled out by the clinical health worker (HW).
11. The health worker should now be able to fill out the rest of the first page including the patient's pertinent medical history such as history or prior cardiovascular disease as well as other medical problems, any remaining investigations or recent hospitalizations/referrals.

12. On the encounter page, HW can confirm CVD risk and fill in percentage or write PCVD if history of heart attack, angina, TIA, stroke or chronic kidney disease.
13. HW can fill in any symptoms or concerns that the patient may have. Possible symptoms and signs are listed on next page.
14. Record patient's pregnancy status if woman of child-bearing age.
15. HW should record if did the foot check in patient with diabetes or known PVD and treatment plan.
16. Fill in appropriate treatment plan in the medications column and include medicine name if fill in line and dose. If for some reason, the HW needs to stop the medication, record "STOP" and why in the column.
17. If patient is already on treatment but has poor adherence, the HW can use the "patient poor adherence reasons" to fill in why the adherence is poor.
18. The HW should also document any referrals or urgent management and any other notable issues in the comments column.
19. Once a treatment plan is made and HW schedules a follow-up, record the date for follow-up and put name in encounter line.
20. The back counselling and education page can be filled out by any member of the health care teams- this includes ancillary staff, community health worker, the doctor or the nurse.





Grid for National ID No.

District: \_\_\_\_\_

Health unit: \_\_\_\_\_

At enrolment: Date: \_\_\_/\_\_\_/\_\_\_

Cohort year: 20\_\_

NCD No.

Grid for NCD No.

1 Patient/Supporter/CHW details

Form for Patient/Supporter/CHW details including name, address, phone, and follow-up status.

2 Patient overview (complete at initiation and update as necessary)

Form for Patient overview including diagnoses, complications, and other medical history.

8. Notes

Notes section with horizontal lines for text entry.

5 NCD referral out/hospitalization history

Table with columns: Date, Days if hosp., Reason for referral out or admission, Diagnosis, Any investigations, Recommended meds.

\*Urine ketones for new DM or suspected high blood glucose †If done, urine microralbumin #TB signs include: cough>2 weeks, persistent fever, weight loss, night sweats

6. Initial visit and annually or with change of clinical status

Table for clinical status monitoring with columns for cholesterol, creatinine, potassium, HbA1c, and referral dates.

NCD No.

### Diabetes, hypertension or elevated cardiovascular risk CARD

Name

Visit date <input type="checkbox"/> Tick small box if scheduled	Follow-up visit date	Ht (m) in box below <input type="text"/>	BP (2x)	If DM, blood glucose (mmol/L)  Circle Fasting or Random)	Risk assessment				Signs and symptoms (fill in)	If DM, foot check (see codes)	If woman childbearing age, pregnant? (Y/N)	Medications (record STOP, why if health worker stops meds)										Urgent mgmt, send to hospital, refer, consult or link	Comments (incl. current plan, observations, complications and update pt history, stable/modify Rx, counselling, lab orders)	HW name		
					Smoking in last yr (Y/N or Quit)	Alcohol in last mo. (Y/N), # units/day	Adequate physical activity (Y/N)	CVD risk % or PCVD				Write in name in header, record dose/frequency below														
												Insulin	OHA	Anti-hypertensives			Other meds									
														Dose/Frequency	Metformin	Sulfonyl:	Other	TD:	CCB:	ACE/ARB:	BB:				FDC:	Statin:
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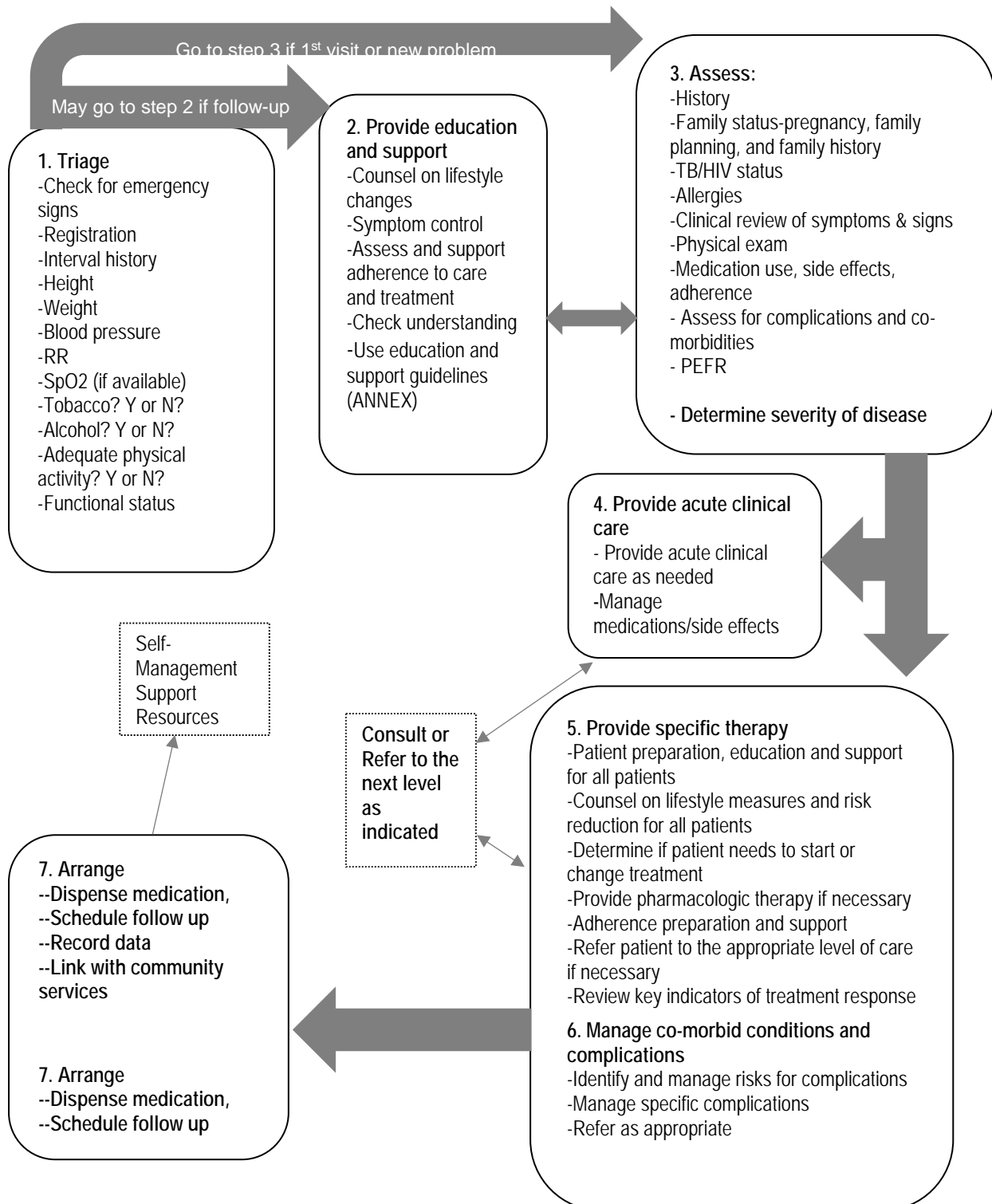
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Stop reasons	Possible signs and symptoms	Foot check	Medication abbreviations
<b>1</b> Medication side effects <b>2</b> Drug interactions <b>3</b> Severe illness, hospitalization <b>4</b> Medications not working	<b>5</b> Drugs out of stock <b>6</b> Formulary change <b>7</b> Other (specify)	<i>If diabetes or known foot/leg problems (PVD) (may have more than one):</i> <b>Tick (✓) if done</b> <b>X</b> =Not done <b>Normal</b> <b>Neuropathy</b> <b>PVD</b> =peripheral vascular disease <b>Deformities</b> <b>Ulcers</b> -consider refer <b>Abscess</b> or deep infection-refer <b>Gangrene</b> -refer	Write in code, and dose and frequency in rows. If change, then fill in row. <b>Insulin:</b> Fill in type e.g. Long (basal)- or Short-acting or Mixed <b>Oral hypoglycaemics (OHA):</b> <b>Metformin</b> ; <b>Sulfonylurea</b> - <b>glimepiride</b> , <b>glibenclamide</b> <b>Anti-hypertensives:</b> <b>TD</b> =thiazide diuretic- <b>bendroflumethiazide</b> , hydrochlorothiazide ( <b>HCTZ</b> ) <b>CCB</b> =calcium channel blocker e.g. <b>nifedipine</b> , <b>amlodipine</b> <b>BB</b> =beta blocker e.g. <b>atenolol</b> , <b>bisoprolol</b> , <b>metoprolol</b> , <b>carvedilol</b> <b>ACE/ARB</b> = angiotensin converting enzyme inhibitor e.g. <b>enalapril</b> , <b>captopril</b> , <b>Ramipril</b> ; angiotensin receptor blocker- <b>losartan</b> , <b>telmisartan</b> , <b>valsartan</b> <b>FDC</b> =fixed-dose combination <b>Statin</b> =e.g. <b>atorvastatin</b> , <b>simvastatin</b>
<b>BMI</b> <18.5: <b>Underweight</b> 18.5-24.9: <b>Normal</b> ≥25: <b>Overweight</b> ≥30: <b>Obese</b> (if obese, circle BMI, fill out front of card)	Excessive Urination Excessive Thirst or drinking of water Excessive hunger or Weight Loss Nocturia Headache Visual changes – e.g. blurry vision Fatigue Palpitations or chest pain Fever Cough Dizziness Shortness of breath PN Tingling, numb or painful feet or legs Poor Wound healing Sexual problems (e.g. inability to maintain erection) Oedema <b>Other</b> (specify)	<b>Reason for poor adherence to meds</b>	
<b>Risk assessment</b> - follow-up on counseling page		<b>1</b> Forgot <b>2</b> Asleep <b>3</b> Change of routine or busy <b>4</b> Travel cost <b>5</b> Limited patient finances <b>6</b> Distance to clinic <b>7</b> Patient lost/ran out of pills <b>8</b> Stock out of medicines <b>9</b> Toxicity/side effects <b>10</b> Feels ill	<b>11</b> Pill burden <b>12</b> Felt well <b>13</b> Depression <b>14</b> Alcohol/substance abuse <b>15</b> Stigma/disclosure concerns <b>16</b> Lack of food <b>17</b> Poor palatability <b>18</b> Patient decision <b>19</b> Patient did not know to continue <b>20</b> Other (specify)
<b>Waist circumference</b> in cm <b>Smoking:</b> how many cigarettes/day <b>Alcohol:</b> 1 unit=half pint (237ml) of beer/lager (5% alcohol); 100ml wine (10% alcohol); 25ml spirits (40% alcohol) <b>Adequate physical activity:</b> Y if more than 30 minutes/day x 5 (150 minutes/week)			



# PROTOCOL 2: CLINICAL ASSESSMENT AND MANAGEMENT FOR CHRONIC RESPIRATORY PROBLEMS (ASTHMA/COPD)

## SEQUENCE OF CARE



# 1 TRIAGE

(for registration-this may be registrar or initial health worker; top portion of chronic care form may be filled out)

- Always check for emergency signs (airway, breathing, circulation, unconscious/convulsing and pain)—see IMAI Acute Care. If any positive signs, provide emergency treatment and refer urgently to hospital
- Greet the patient
- Register if new patient
- If follow-up, retrieve records/file
- Measure height at initial visit
- Measure weight at each visit
- Measure blood pressure at each visit
- Measure RR, SpO<sub>2</sub> (if available), and pulse
- Tobacco? Y or N? Record “Yes” if smoking during the last 12 months. If YES, record on patient monitoring card. If other tobacco use, write in below within the risk assessment box.
- Alcohol? Y or N? Record “Yes” if person drinks alcohol in last 30 days. If yes, how often and record number of units per day. One unit (drink) = half pint beer/lager (5% alcohol), 100 ml of wine (10% alcohol), spirits 25 ml (40%alcohol).
- Adequate physical activity? Y or N?- Record “Yes” if person engages in at least 30 minutes of physical activity 5 days a week (2.5 hours/week)
- Determine reason for visit
- For new patients, ask about any concerns that they have. For follow-up, take interval history
- **Determine functional status--**Record whether patient:
  - Able to work, go to school, do housework, harvest or play (in child) (**W**)
  - Ambulatory but not able to work (**A**)
  - Bedridden (**B**)

## ASK- for all visits:

- Have you had any medication changes or new medications started since the last visit? Record in register.
- Any problems/concerns that you have today?
- Allergies- to medications, environmental
- Decide if patient needs to see clinician on this visit. Patient should see the clinician:
  - If it is their first ever visit
  - For scheduled clinical visit
  - For any new symptoms

## 2. EDUCATE AND SUPPORT THE PATIENT

See Section 2 under the Sequence of Care

Detailed *Education and Support* guidelines are provided in Annex A at the end of this module and are also supported by communication aids.

**For the first visit** education and counselling should be done by the clinical health worker, after their assessment.

On every visit, key education and counselling laid out in Annex A needs to be provided over time to the returning patients. Expert patients (lay providers) are often very effective in delivering this counselling after they have been trained. This counselling is then reinforced by any trained member of the clinical team:

- Patients need education on understanding their disease and its chronic nature
- Counsel all patients on the need for lifestyle changes i.e. smoking, avoiding triggers
- Educate and counsel on their management of their disease(s), its treatment, adherence
- Explain the importance of regular treatment, adherence
  - Discuss asthma or COPD control
  - Discuss what to do if breathing gets more difficult
  - Talk about adherence to current medication- See **Section 9**
- Discuss concerns about acute and chronic complications that may have developed
- Acknowledge patient's efforts and successes at self-management

### 3. ASSESS

The aim of the clinical assessment is to

- Determine the patient's goal for the visit (why did you come to the clinic today?)
- Evaluate patient's clinical status (wellness) and determine the diagnosis
- Identify any acute problems
- Identify any complications, including recent hospitalizations
- Determine the severity of symptoms
- Identify any triggers or risk factors that may be worsening their disease
- Evaluate current tobacco use and environmental exposures

Chronic respiratory diseases comprise many possible conditions.

**For any chronic respiratory disease, it is important to ask about:**

- Symptoms- cough, difficult breathing, tight chest, and/or wheezing
- Duration of symptoms
- Associated symptoms- fevers, nasal discharge, postnasal drip, wheezing (may be episodic), shortness of breath (may be episodic), weight loss, leg oedema, reflux symptoms (sour taste, in mouth, heartburn), presence/absence of sputum production, blood in sputum, chest pain-characterize
- New medications- angiotensin converting enzyme (ACE) inhibitors (can cause cough), beta-blockers (can worsen asthma)
- Temporal-worse during certain seasons
- Ask about specific triggers-weather, allergies, dust, seasons, animals, recent upper respiratory tract infections, occupational exposures

This guideline manual will focus on those that are more prevalent (in bold) in low-resource settings. The differential includes:

Differential diagnosis (DDX) of chronic cough, wheeze or difficulty breathing	In favour
<b>Chronic obstructive pulmonary disease (COPD)</b>	-shortness of breath, may be initially noticed on exertion -cough with small amount of sputum production, generally in morning but may progress -wheezing -chest tightness -symptoms may be worse in morning, persistent -history of smoking or inhalational exposure
<b>Asthma</b>	-intermittent episodes of wheezing or cough or shortness of breath -chest tightness -symptoms worse at night or in morning -characteristic triggers- allergens such as dust, animals, exercise, cold air

<p>Pulmonary oedema e.g. secondary to heart failure</p>	<ul style="list-style-type: none"> <li>-fatigue</li> <li>-difficulty breathing- may be worse with exercise, while lying down and may wake the person at night</li> <li>-wheezing</li> <li>-signs of fluid overload (elevated JVP, crackles (rales), lower extremity oedema, swollen abdomen-ascites, weight gain)</li> <li>- history of <b>rheumatic heart disease</b> or valvular heart disease, cardiomyopathy, hypertension, ischaemia, renal disease</li> </ul>
<p>Occupational lung diseases e.g. silicosis, asbestosis, coal worker pneumoconiosis</p>	<ul style="list-style-type: none"> <li>-progressive breathlessness with exertion</li> <li>-persistent non-productive cough</li> <li>-history of occupational exposure (e.g. asbestosis)</li> <li>-component of this in asthma and COPD</li> </ul>
<p>Lung cancers</p>	<ul style="list-style-type: none"> <li>-chronic cough, haemoptysis</li> <li>-may have localized wheeze</li> <li>-associated anorexia, weight loss</li> <li>-may have history of smoking tobacco or exposure to indoor air pollution (e.g. indoor coal stove)</li> </ul>
<p>Pulmonary tuberculosis</p>	<ul style="list-style-type: none"> <li>-cough for more than 1 week</li> <li>-nonproductive or productive of sputum-initially may be in morning, then progresses, may be blood-streaked or frank haemoptysis</li> <li>-mild to moderate shortness of breath (occasionally severe)</li> <li>-fever</li> <li>-fatigue</li> <li>-night sweats</li> <li>-weight loss</li> <li>-may have history of exposure to someone who was sick for a long time or known TB</li> </ul>
<p>Pulmonary fibrosis</p>	<ul style="list-style-type: none"> <li>-usually secondary to other respiratory diseases</li> <li>-older (&gt;60)</li> <li>-gradual onset of shortness of breath on exertion</li> <li>-nonproductive cough</li> <li>-history of smoking</li> <li>-consider TB- post TB lung disease is common cause of lung fibrosis</li> </ul>
<p>Bronchiectasis</p>	<ul style="list-style-type: none"> <li>-cough with daily production of sputum</li> <li>-recurrent chest infections</li> <li>-may have wheeze, shortness of breath, pleuritic chest pain</li> </ul>

## Confirm the diagnosis and decide whether the patient has asthma or COPD

Asthma and chronic obstructive pulmonary disease (COPD) can often present similarly. Patients may have presenting symptoms that include cough, difficulty breathing, chest tightness and/or wheezing. The symptoms may be chronic or present acutely in an asthma or COPD "attack." Patients can also have chronic cough and difficulty breathing from heart failure, infections such as tuberculosis or cancer.

### Asthma

Asthma is characterized by:

- airway inflammation
- airway hyperresponsiveness in response to inhaled triggers
- airflow limitation or narrowing of airways

The combination of these factors lead to symptoms such as shortness of breath, wheeze, and cough +/- sputum. The key feature of asthma is that it is reversible which means that there are times without symptoms i.e. normal periods. Common asthma triggers include:

- Irritants-indoor/outdoor allergens- pollen, mould, dust mites; environmental tobacco smoke, smoke from wood or other biomass fuel, household aerosols, chemical irritants in workplace
- Viral or bacterial infection
- Exercise
- Weather changes
- Gastro-oesophageal reflux
- Emotions or stress

### COPD

COPD encompasses chronic lung diseases that cause progressive limitation in airflow. Common symptoms include:

- Chronic cough
- Breathlessness
- Increased amount of sputum
- Wheeze
- Decreased exercise tolerance
- History of recurrent bronchitis

Main risk factors:

- Smoking tobacco
- Workplace chemicals and dust (irritants, fumes, vapours)
- Indoor/outdoor air pollution (e.g. biomass fuel used for cooking/heating)
- Second hand smoke exposure

**Start patient NCD card: asthma or COPD**



Features that differentiate asthma from COPD\*:

Ask	ASTHMA	COPD
<b>Previous history</b>	- previous diagnosis of asthma	-previous diagnosis of COPD
<b>Onset of symptoms</b>	- usually in childhood or early adulthood but can occur at any age	- in middle age or later (usually after age 30)
<b>History</b>	- seasonal allergies, hay fever, eczema/skin rash - clear, identifiable triggers of symptoms (see above)	- heavy smoking history i.e. >20 cigarettes/day for >15 years -work history; history of heavy and prolonged exposure to burning fossil fuels in an enclosed space, or high exposure to dust or occupational fumes -exposure to cooking (in poorly ventilated areas)
<b>Symptoms</b>	-intermittent; periods of no symptoms (asymptomatic) in between - can be worse at night or early morning - triggered by respiratory infection, exercise, weather changes, seasonal allergies or stress -responds to salbutamol or other bronchodilators	-worsened slowly over a long period time i.e. progressive -may have history of daily or frequent cough and sputum production starting before shortness of breath -symptoms that are persistent with limited asymptomatic periods - repeated episodes of severe bronchitis

\*consider that asthma and COPD can co-exist

## 3.1 Ask

### For all visits:

- How have you been?
- What problems have you developed?
- Have you had any of the following? **If yes**, ask for **how long**:
  - Daytime symptoms (cough, wheezing shortness of breath, sputum production, haemoptysis)
  - Night-time symptoms (that awaken you from sleep or prevent you from falling asleep)
  - Limitation in daily activities
  - Worsening symptoms with seasonal, weather, or environmental changes or other triggers
  - Have you needed urgent medical care? **If yes**, ask for record, diagnosis and treatment.
  - Which medications are you taking? How do you take your medicines?
  - How often do use the salbutamol inhaler during the week to treat difficulty breathing. How do you use the inhaler? Demonstrate use of spacer.
  - Assess adherence if already on treatment
  - What problems have you had taking your medicines?
  - Do you use tobacco?
  - What usual physical activities are you doing?
  - What else do you want to talk about?

### 3.2 Assess family status

- Ask about family history of lung disease (asthma, COPD, lung cancer) in first degree relatives (parents, siblings, children); the knowledge helps in assessment of risk factors for disease progression or complication as well as for disclosure, and family support.
- For women of child bearing potential
  - Determine pregnancy status; pregnant women may need to be referred to higher level of care.
  - Determine breastfeeding status in postpartum women,
  - Assess family planning use; offer contraception if desired

### 3.3 Review TB and HIV status

- Suspect TB in patient with prolonged symptoms-cough over 1 week, persistent night sweats and/or fevers or weight loss.
  - **If TB suspected→Send a sputum for AFB or use GenExpert. Refer if not producing sputums or if suspicious lymph nodes. Then follow national guidelines for TB**
  - TB diagnosis and treatment plan
- Ask about HIV status. If negative or never tested, offer or refer for testing. If positive, ensure that person is enrolled in HIV care, otherwise refer. If chronic cough in HIV positive patient, this could be TB or another opportunistic infection, check for TB as above and manage.

### 3.4 Look, listen, feel

#### LOOK:

- Ask patient to remove their shirt for an exam
- Inspect the chest for air movement and excursion, difficulty taking deep breaths
- Look for intercostal retractions
- Look for work of breathing
  - count respiratory rate (if >25, concern for respiratory distress)
  - look for nasal flaring
  - look for use of accessory muscles while breathing (neck muscles, belly breathing)
  - look for tripodding (position where person leaning forward and supporting body with hands on knees or another surface due to respiratory distress)
- Look for digital clubbing, a sign of chronic hypoxemia
- Look for pallor. **If pale**, check haemoglobin.

#### LISTEN:

- Listen to the lungs on both sides and assess for wheezing and/or for crackles
- Check the weight and review trend:
- Look for evidence of weight loss and wasting (especially important in severe COPD and TB). If weight loss, ask about food availability and intake.

Refer patient to the next level of care if needed for a comprehensive assessment.

### 3.5 Laboratory tests and other diagnostics

- Measure Peak Expiratory Flow rate (PEFR)
- Measure SpO<sub>2</sub> (if available)
- If pallor, measure haemoglobin

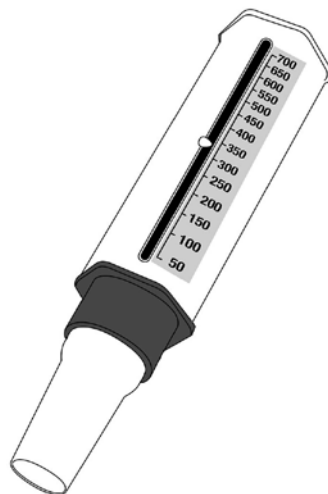
#### How to measure peak expiratory flow rate (PEFR):

Need-peak flow meter and cardboard disposable (or plastic reusable) mouthpiece

1. Fit mouthpiece to end of peak flow meter and set marker at zero level
2. Ask patient to stand
3. Ask patient to exhale completely
4. Then ask patient to inhale as deeply as possible
5. Instruct patient to place Peak Flow Monitor (PFM) to his/her lips, creating a seal
6. Instruct patient then to blow out into the device as forcefully and as quickly as possible, with the goal to raise the PFM dial as high as possible. Record the result in litres per minute (l/min). Repeat 2 more times and record the best of three readings.

It may help to demonstrate for the patient, if you have a clean mouthpiece available.

Do not reuse PFM mouthpieces for different patients.



#### To aid in the diagnosis of asthma or COPD

- Measure the PEF before inhalation of salbutamol (PEF before bronchodilator)
- Give 2 puffs of salbutamol metered-dose inhaler (MDI) or with a spacer
- Measure PEFR again in 15 minutes (PEF after bronchodilator)
  - if the PEFR improves by 20%, a diagnosis of asthma is very probable
  - if the PEFR improves by less than 20%, a diagnosis of COPD is more likely

## 3.6 Determine the severity at each visit.

Asthma/COPD control should be assessed using severity and frequency of symptoms.

Ask\*:

- Do you have cough, wheeze, tight chest or shortness of breath 3 or more times a week?
- Do your symptoms wake you at night (1 or more times a week)?
- Do you stop exercising because of your symptoms (in the past 3 months)?
- Do you ever miss work or school because of your symptoms (in the past 3 months)?
- Do you use your beta agonist inhaler (salbutamol) more than 3 times a week (except one dose/day for exercise)?

\*If "yes" to one or more questions, asthma or COPD may not be under control.<sup>10</sup>

Determine the stage of the disease by using the appropriate table:

### ASTHMA SEVERITY

SEVERITY	SYMPTOMS	LIMITATIONS	INHALER USE	PEFR
<b>Intermittent</b>	< Weekly -Nocturnal symptoms <2X/mo	No limitation in daily activities.	Inhalers used < 1 time per week.	> 80% predicted or personal best
<b>Mild Persistent</b>	Weekly -Nocturnal symptoms >2X/mo	Minor limitation in daily activities.	Inhalers used 1 or more times per week, but not every day.	> 80% predicted or personal best.
<b>Moderate Persistent</b>	Daily -Nocturnal symptoms weekly	Some limitation in daily activities.	Inhalers used daily.	60 – 80% predicted or personal best.
<b>Severe Persistent</b>	Continuous, more often at night	Extremely limited in daily activities.	Inhalers used several times per day.	< 60% predicted or personal best.

### COPD SEVERITY<sup>11</sup>

STAGE	DESCRIPTION
<b>Mild</b>	Short of breath when hurrying on level ground, or walking up a slight hill.
<b>Moderate</b>	Walks slower than people of the same age on the level of ground because of breathlessness, or has to stop for breath when walking at own pace on the level.
<b>Severe</b>	Stop for breath after walking about 100 meters or after a few minutes on level ground.
<b>Very Severe</b>	Too breathless to leave the house or breathless when dressing or undressing.

<sup>10</sup> 30 second asthma quiz- modified from:

<http://pert.ucalgary.ca/asthma/30%20Second%20Test%20for%20Control.pdf>

<sup>11</sup> Questions are from MRC questionnaire, cited in NICE COPD guideline at <http://guidance.nice.org.uk/CG101>. The relationship of symptoms to COPD severity (defined by FEV1) is approximate.

## 4. PROVIDE ACUTE CLINICAL CARE and refer as needed

Patients with asthma or COPD presenting at the health centre Chronic Care clinic have to undergo initial assessment and be managed according to their presentation.

- Patients who present with Quick Check signs e.g. Airway, Breathing, Circulation (ABCs) signs should be given emergency treatment before transfer to the next level of care.
- Patients presenting with acute clinical conditions other than their asthma or COPD should be assessed and managed.
- *Patients with co-morbid conditions such as heart failure or those with severe symptoms or those who are pregnant must be referred to the next level of care.*

## 5. PROVIDE SPECIFIC THERAPY FOR ASTHMA OR COPD

The components of management of asthma or COPD include:

1. Treat Quick Check signs (ABCs) first. Manage acute exacerbations of asthma or COPD-see p. 69.
2. Patient education- consider non-medication management initially if intermittent or mild symptoms- avoid triggers, stop smoking and exercise-see A9, A5. This also involves education of the patient about the disease, the treatment (and side effects of treatment) and possible exacerbations.
3. Stepwise management with pharmacologic treatment.

### 5.1 Stepwise chronic asthma management

The treatment of asthma proceeds in a stepwise manner, with medications increased as the severity of the condition increases: Initiate treatment based on baseline severity and then increase or decrease treatment according to treatment response and assessment of asthma control using this stepwise approach. Check inhaler technique.

- **Step 1.** Inhaled salbutamol (one puff (100) or two puffs (200mcg)) repeated every four to 6 hour ) as needed (prn)
- **Step 2.** Inhaled salbutamol prn and add low-dose inhaled beclomethasone, starting with 50-100mcg twice daily for adults. If patients previously received inhaled corticosteroids, may start 100 twice daily.
- **Step 3.** Same as step 2 but give higher doses of inhaled beclomethasone, 200mcg or 400mcg twice daily
- **Step 4.** Add long-acting beta agonist (or leukotriene antagonist), if available
- **Step 5.** Add oral prednisolone but in lowest dose possible to control symptoms (0.5 mg/kg/day; nearly always <10 mg daily); reassess weekly and taper when patient stable for 1 week

#### About the drugs\*:

- Salbutamol (inhaler) is a short-acting bronchodilator (SABA) and is the **quick-acting reliever** drug.
- Beclomethasone (inhaled corticosteroid (ICS) and prednisolone (oral) are anti-inflammatory medicines and are the **controller or preventer** drugs.
- Other **controller drugs**- long-acting beta agonist (LABA) such as formoterol or salmeterol (inhaler) may be used in combination with ICS or leukotriene antagonist such as montelukast (oral)
- Inhaled drugs are given via metered dose inhaler; advise on use of spacer
- Note: sustained release (SR) theophylline is not on the WHO essential medicines list; it, however can be used and stopped if there is evidence of toxicity. *Where available, theophylline blood levels should be used to adjust dosing.*

#### Side effects include:

Salbutamol	tachycardia, tremors, hypokalaemia (rare)
Beclomethasone	mild sore throat, hoarseness, occasional thrush- advise patient to use spacer and to rinse out mouth after using inhaled corticosteroid
Systemic corticosteroid (prednisolone)	long-term-infections, diabetes, osteoporosis, high blood pressure, acute adrenal insufficiency if suddenly stopped

\* It may be necessary to advise patients to purchase more effective medications that are not on the national formulary or in stock at the health centre to control moderate or severe persistent asthma.

**Consider referral if:**

- Asthma remains poorly controlled despite on-going treatment. Ensure that patient following treatment plan and is using the correct inhalation technique.
- If diagnosis of asthma remains uncertain.
- If suspect asthma secondary to aspirin intolerance and/or non-steroid anti-inflammatory medicines. These medicines should be stopped.
- If regular oral prednisolone is required to maintain control



## 5.2 Stepwise chronic COPD management

The treatment of COPD proceeds in a stepwise manner, with medications increased as the severity of the condition increases. Decide on appropriate treatment by comparing patient's history, current symptoms, and treatment level, using the Table 5 below based on the baseline severity of the condition and increase based on assessment of COPD control

Management of chronic COPD is determined by:

1. symptoms of breathlessness or exercise limitation
2. frequency of exacerbations
3. severity of airflow obstruction
4. presence of complications

**Table 5: Chronic COPD treatment according to severity**

SEVERITY	TREATMENT
Mild	<ul style="list-style-type: none"> <li>• Inhaled salbutamol as needed (one (100mcg) to two puffs (200 mcg) up to 4 times daily or ipratropium* (20-40 mcg up to 4 times daily) as needed</li> </ul>
Moderate	<ul style="list-style-type: none"> <li>• Inhaled salbutamol or ipratropium as needed</li> <li>• Add long-acting beta agonist (salmeterol or formoterol), if available</li> </ul>
Severe	<ul style="list-style-type: none"> <li>• Inhaled salbutamol or ipratropium as needed</li> <li>• Add long-acting beta agonist (salmeterol or formoterol) if available AND beclomethasone (400mcg twice daily) OR ipratropium 4 times daily</li> </ul>
Very Severe	<ul style="list-style-type: none"> <li>• Inhaled salbutamol or ipratropium as needed</li> <li>• Add long-acting beta agonist (salmeterol or formoterol) if available AND beclomethasone (400mcg twice daily) OR ipratropium 4 times daily AND beclomethasone (400 mcg twice daily)</li> <li>• Maintenance prednisolone is <u>NOT</u> recommended</li> </ul>

\*Ipratropium is an anticholinergic medication that also helps to open the airways (bronchodilator) and also reduces mucous production. It does not work as quickly as salbutamol but lasts longer which is why it also works well with salbutamol.

## 5.3 Review key indicators of treatment response or disease severity and adjust treatment regimen

The goal of treatment of patients with asthma is well-controlled symptoms that have minimal interference on daily function. For COPD, the goal is to minimise progression of disease, optimize symptom control and return patients to their baseline function. Achieving these goals reduce and/or delay the risk of developing complications associated with these conditions.

At each visit, health care workers should assess symptom control, exacerbations, and observations that are taken.

## Asthma

- Optimal control is when symptoms are minimal.
- On going follow up of the patient is essential to maintain control and establish the lowest step and dose of treatment to minimize cost and side effects.
- Patients should be seen every 1 to 3 months after the initial visit, and every 3 months thereafter once control achieved.

## Asthma

If:	And:	Then:
Moderate or severe acute asthma attack now		Manage according to Acute Exacerbation (7.4)
Asthma not in control	Patient is compliant with current treatment plan	Increase regimen by 1 step and refer to hospital for add-on treatment
	Patient not compliant with current treatment plan	Give further patient education. Continue present treatment plan if only mild wheezing.
Sustained asthma control	Symptoms in control for less than 3 months	Continue present treatment plan (this may include a scheduled reduction in treatments)
	Symptoms in control for more than 3 months and no prednisone for 6 months	Decrease by 1 step or refer non-urgently to hospital for revised treatment plan

## COPD

- Optimal control achieved when:
  - Symptoms are better controlled, with minimal interference or limitations in daily activities or, if not possible, to aim to get patients back to their baseline
  - Exacerbations are infrequent, no hospitalizations in the last 3 months
  - Risk factors are avoided (especially tobacco)

## 5.4 If patient is having an acute attack, decide on severity and action plan

### ASTHMA attack

SYMPTOMS	CLASSIFY	TREATMENT
<p><u>Wheezing and</u></p> <ul style="list-style-type: none"> <li>Severe respiratory distress</li> <li>RR &gt; 25 breaths/minute</li> <li>HR ≥110 beats/min</li> <li>Inability to complete sentence in 1 breath</li> </ul> <p>Very severe</p> <ul style="list-style-type: none"> <li>Altered consciousness</li> <li>Exhaustion</li> <li>Arrhythmia</li> <li>Hypotension</li> <li>Cyanosis</li> <li>Silent chest</li> <li>Poor respiratory effort.</li> <li>SpO<sub>2</sub> &lt;92% on pulse oximeter, if available</li> </ul>	<p><b>Severe asthma attack</b></p>	<ul style="list-style-type: none"> <li>Salbutamol MDI with spacer 4 puffs every 20 minutes for 1 hour (if able) or by nebulizer 5 mg/ml given every 20 minutes for 1 hour (using 20-25% of vial at each administration) or by continuous nebulisation*</li> <li>Prednisolone 30-40 mg for 5 days (or IV hydrocortisone if prednisolone not available or cannot swallow)</li> <li>Oxygen (2 L/minute at minimum, if available) and if oxygen saturation &lt; 90%</li> <li>Reassess continuously (15-30 minutes)</li> <li>If no response- increase frequency of salbutamol or by continuous nebulization at 5-10 mg per hour (see IMAI DCM QC-give salbutamol)</li> <li><b>Refer to District Hospital if failing to respond to treatment or if very severe exacerbation (altered conscious level, exhaustion, SpO<sub>2</sub>&lt;92%)</b></li> <li>Continue salbutamol 4 puffs every 20 minutes or nebulizer while referring</li> </ul>
<p>Wheezing without severe respiratory distress</p>	<p><b>Moderate asthma attack</b></p>	<ul style="list-style-type: none"> <li>2-4 puffs salbutamol using a spacer every 20 minutes for 1<sup>st</sup> hour and single dose of oral prednisone (0.5-1mg/kg/day), then continue and reassess. If response (disappearance of clinical signs), then monitor for 1 hour and continue treatment at home. If no or incomplete response, then treat as severe attack</li> </ul>

\* Aminophylline is not recommended due to narrow safety margin/ poor risk:benefit ratio. However, if salbutamol MDI or salbutamol by nebulizer are not available, it can be used. **Oral salbutamol tablets are not effective treatment.**

### COPD attack

SYMPTOMS/SIGNS	CLASSIFY	TREATMENT
<p>One or more of the following signs:</p> <ul style="list-style-type: none"> <li>• Very fast breathing (RR&gt;25 breaths/minute)</li> <li>• Confusion, agitation or lethargy associated with breathlessness</li> <li>• Not able to walk unaided</li> <li>• Temperature less than 35°C</li> <li>• Oedema of both ankles</li> <li>• Speaks only in single words or not at all</li> <li>• Haemoptysis more than 50 ml</li> <li>• Pleuritic chest pain</li> <li>• Persistently worsening oxygen saturation to less than 88%</li> </ul>	<p><b>COPD with SEVERE DETERIORATION</b></p>	<ul style="list-style-type: none"> <li>• Antibiotics-consider amoxicillin, erythromycin or doxycycline</li> <li>• Start prednisolone 30-40 mg pre-referral</li> <li>• Salbutamol in high doses from metered dose inhaler and spacer (e.g. 4 puffs every 20 minutes for 1 hour) or by nebulizer</li> <li>• Add ipratropium, if available</li> <li>• Oxygen, if available, by mask</li> <li>• <b>Refer URGENTLY</b> to hospital</li> </ul>
<p>None of the above but</p> <p>Increased shortness of breath</p>	<p><b>COPD with MODERATE DETERIORATION</b></p>	<ul style="list-style-type: none"> <li>• Antibiotics-consider amoxicillin, erythromycin or doxycycline</li> <li>• Oral prednisolone 30-40 mg for 7 days</li> <li>• Salbutamol in high doses from metered dose inhaler and spacer (e.g. 4 puffs every 20 minutes for 1 hour) or by nebulizer</li> <li>• Go up a step in treatment- add or increase dose</li> <li>• Oxygen, if available, by mask</li> <li>• <b>Refer to District Hospital</b> if not responding</li> </ul>
<ul style="list-style-type: none"> <li>• Increased sputum production <u>or</u></li> <li>• Sputum colour becomes yellow or green (colour change) <u>or</u></li> <li>• Fever (37.5° C or above)</li> </ul>	<p><b>ACUTE INFECTION in COPD</b></p>	<ul style="list-style-type: none"> <li>• Give appropriate oral antibiotics</li> <li>• Give routine follow-up care for known COPD (check regimen, adherence with treatment plan)</li> <li>• If smoking, counsel to stop smoking-see Annex A9-Protocol 1.</li> <li>• Follow-up in 1 week.</li> <li>• Advise on worsening symptoms when to return immediately</li> </ul>

## 5.5 Patient preparation, education, and support

- Patients and their families should be educated regarding prevention and treatment to ensure they are empowered to best manage their disease-see **Annex A18 to A24**.
- Advise on asthma prevention and treatment (A20)
- Explain how to make spacer from a plastic bottle (A21)
- Counsel on the 3 zones of asthma self-management (A22)
- Educate patients on techniques, strategies, and the importance of efforts to prevent COPD disease progression (A23).
- Counsel patient who seems depressed or frightened by their disease- see A17.

**Follow up visit (at least every 3 months) at primary care level or sooner if new medication started.**

## 6. MANAGE COMPLICATIONS







### COPD




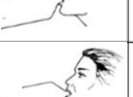


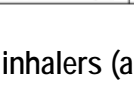
- Suspect heart failure in advanced (stage 3 or 4) COPD patients with severe shortness of breath and pitting leg oedema
  - Consult or refer for further evaluation. Consider diuretics.
- Suspect lung cancer in COPD patients with unexplained weight loss along with COPD symptoms
  - Refer
- Other comorbidities- cardiac disease, asthma, osteoporosis, depression/ anxiety

## 7. DISPENSE MEDICATION SCHEDULE, FOLLOW-UP, AND RECORD DATA

### 7.1 Train patient to use medication/review how patient is using medication

7. Ensure all patients with new diagnoses and inhaler medications are trained in proper inhaler technique; review the inhaler technique on all follow-up visits.
  - If available, use placebo-inhaler to teach technique
  - Ask the patient to show you how (s)he takes the medicine
  - HW should always encourage the use of spacer

Metered-dose inhaler <u>without</u> spacer:	
1. 	Remove the cap.
2. 	Shake the inhaler.
3. 	Breathe out slowly and steadily.
4. 	Put the inhaler in your mouth - seal the lips around the inhaler.
5. 	Press the canister once to release a dose of medicine while you breathe in very slowly and as deeply as possible.
6. 	Hold your breath for 10 seconds before you breathe out slowly and steadily.

Metered-dose inhaler <u>with</u> spacer with mouthpiece:	
1. 	Remove the cap.
2. 	Shake the inhaler and insert it into the base of the spacer.
3. 	Breathe out slowly and steadily
4. 	Hold the mouthpiece of the spacer in your mouth - seal your lips around it.
5. 	Press the canister to release the correct number of puffs into the spacer (1 to 15 puffs, depending on treatment plan).
6. 	Breathe in through your mouth as slowly and deeply as possible.
7. 	Hold your breath for 10 seconds before you breathe out slowly and steadily (? breathe in again without pressing canister).

2. On each return visit, assess appropriate use of inhalers (ask patients to demonstrate how they use inhaler at home) and adherence

3. Review treatment plan and patient's record. Then compare medication use to treatment plan and level of symptom control:

- Which step is the patient?
  - Severe
  - Moderate
  - Mild
  - Intermittent
- Are medications being used according to the step and written treatment plan?
- Explore reason for greater or lesser use of medications.

- Are medications scheduled to be reduced?
- Problem solve with patient/family to overcome barriers to following the plan.
- Provide additional education to relieve concerns.

## 7.2 Dispense medications according to treatment plan

Dispense medications to patient. Ensure the treatment plan is fully understood by the patient. Ensure they understand that they should return to the clinic if their symptoms worsen and their medication is no longer effective.

## 7.3 Arrange follow-up clinic visit or referral

### 7.3.1 Asthma follow-up and referral

Asthma patients should have regular reviews every 3-6 months and more frequently when treatment has been changed (2-6 weeks) or asthma is not well controlled. Inhaler technique should be reassessed at every visit.

Consider referral for specialist advice when:

- Asthma remains poorly controlled,
- When the diagnosis of asthma remains uncertain,
- When regular oral prednisolone is required to maintain control.

### 7.3.2 COPD follow-up and referral

COPD patients should have regular reviews every 3-6 months and more frequently when treatment has been changed or COPD is not well controlled or less frequently if stable. Inhaler technique should be reassessed at every visit.

Consider referral for specialist advice when:

- COPD remains poorly controlled,
- When the diagnosis of COPD is uncertain,
- When exacerbations are increasing in frequency and severity despite increased treatment.
- When symptoms are becoming progressively worse despite therapy, or if patient begin developing significant constitutional symptoms (weight loss, change in mental status)

## 7.4 Manage non-adherers- link to community care



## 8. SPECIAL CONSIDERATIONS FOR ADOLESCENTS WITH ASTHMA

- Extra effort is needed to educate about asthma and prepare adolescents for self-management. It is especially important for them to feel competent, independent and in control.
- Adolescents are often less tolerant of side-effects. They need to be well informed of the possibilities.
- Be aware of the individual's weight and dosing.
- Ask where the adolescent will store the drugs (privacy concerns)
- Make special efforts to educate about asthma and prepare adolescents for self-management. It is especially important for them to feel competent, independent and in control.
- Extra effort is required to achieve adherence.
- Denial of the disease and denial or lack of recognition of asthma symptoms are common
  - Concerns about peer pressure and being different may impair use of inhalers
  - Make sure to plan for ways to permit sports and exercise
- Treatment may not be affordable

### HOW TO FILL OUT THE NCD PATIENT CARD: Asthma and COPD

1. Fill in top of card- district, health unit, enrolment date, cohort year, national ID and NCD ID nos. Next fill in the patient's name, age, sex, date of birth, address, supporter information, and community health worker information (if available). This can be done by any member of the health care team at initiation and update as needed.
2. Fill in patient overview box. Tick the diagnosis at enrolment, if confirmed by spirometry, and update as needed. Fill in patient history, risk factors, comorbidities and complications. These can be updated over time.
3. Fill in drug allergies, including the reaction that occurs with the drug allergy.
4. Fill in the medications that the patient is taking.
5. Fill out any family history of asthma, allergy-related conditions or lung cancer.
6. Ask patient about environmental exposures and record.
7. Record and update on follow-up status as needed.
8. Fill in Notes as needed for important patient information.
9. Fill out for any specialty referrals or hospitalizations that may have occurred with the patient. It is important to include reason for referral, diagnoses, and pertinent labs or investigations that occurred.
10. Turn the page to the encounter pages, fill out visit date. If patient has been referred to the health centre from another facility or the community, information may be filled out in the first encounter row and indicate "referral" or "transfer in" to the left of the visit date. If scheduled follow-up visit, tick box.
11. Fill in patient height in box, weight on encounter line and calculate BMI and write below weight on same encounter line. Circle BMI if obese category.
12. Record vitals- RR, blood pressure, SpO2, pulse.
13. Record patient's response to questions about tobacco, physical activity and alcohol use. The rest of this page can be filled out by the clinical health worker (HW).
14. The health worker should now be able to fill out the rest of the first page including the patient's pertinent medical history such as history or prior cardiovascular disease as well as other medical problems, any remaining investigations or recent hospitalizations/referrals.

15. If peak flow meter available, HW can determine PEF for patients with asthma.
16. HW can fill in any symptoms or concerns that the patient may have. Possible symptoms and signs are listed in the codes on the next page. Also HW should determine asthma/COPD severity and record.
17. Record patient's pregnancy status if woman of child-bearing age
18. Fill in appropriate treatment plan in the medications column and include medicine name if fill in line and dose. If for some reason, the HW needs to stop the medication, record "STOP" and why in the column.
19. If patient is already on treatment but has poor adherence, the HW can use the "patient poor adherence reasons" to fill in why the adherence is poor.
20. The HW should also document any referrals or urgent management and any other notable issues in the comments column.
21. Once a treatment plan is made and HW schedules a follow-up, record the date in next follow-up line and put HW name in encounter line.
22. The back counselling and education page can be filled out by any member of the health care teams- this includes ancillary staff, community health worker, the doctor or the nurse.



# NCD patient card: asthma and COPD

National ID No.

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District: \_\_\_\_\_ Health unit: \_\_\_\_\_

At enrolment: Date: \_\_\_/\_\_\_/\_\_\_ Cohort year: 20\_\_ NCD No. \_\_\_\_\_

<b>1. Patient/Supporter/CHW details</b>				<b>2. Patient overview</b> (complete at initiation and update as necessary)											
Patient name				Diagnoses				<input type="checkbox"/> Asthma <input type="checkbox"/> confirmed by specialist/spirometry?				<input type="checkbox"/> Allergic rhinitis			
Pt file #		Age	Birth m/y					<input type="checkbox"/> M <input type="checkbox"/> F		Date:				Date:	
Physical address Location:		Village Subcounty:		Patient history, risk factors, comorbidities and complications				<input type="checkbox"/> COPD <input type="checkbox"/> confirmed?				<input type="checkbox"/> Eczema			
Patient phone		Parish:						Date:				Date:			
Supporter, relationship	Name			*To calculate number of pack-years=(# cigs per day/20) X #yrs OR # packs/day X #yrs				Tobacco: <input type="checkbox"/> Never smoker <input type="checkbox"/> Smoker ___ cigarettes or packs /day (circle) for ___ # yrs <input type="checkbox"/> Past smoker quit date: ___ <input type="checkbox"/> Other tobacco ___ pack yrs*							
	Phone							Triggers: <input type="checkbox"/> respiratory infection <input type="checkbox"/> exercise <input type="checkbox"/> weather changes <input type="checkbox"/> seasonal allergies <input type="checkbox"/> dust <input type="checkbox"/> smoke/fumes <input type="checkbox"/> animals <input type="checkbox"/> stress <input type="checkbox"/> other allergies							
Community health worker	Name							<input type="checkbox"/> CVD risk/PCVD m/y				<input type="checkbox"/> negative <input type="checkbox"/> unknown <input type="checkbox"/> positive--year: ART start date: ARVs:			
	Phone							HIV Unique ID: Facility:				TB <input type="checkbox"/> TB presumptive? Send for sputums/refer Year TB+: Completed TB Rx? <input type="checkbox"/> Y <input type="checkbox"/> N <input type="checkbox"/> TB Rx Start date: End date:			
<b>3. Drug allergies</b>				<b>4. Medications</b>				Mental Health <input type="checkbox"/> depression <input type="checkbox"/> harmful alcohol use/dependence <input type="checkbox"/> other substance use <input type="checkbox"/> other... LINK Other diagnoses: <input type="checkbox"/> Prior CVD <input type="checkbox"/> DM <input type="checkbox"/> Cancer <input type="checkbox"/> HTN <input type="checkbox"/> Other							
<b>5. Family history</b>								<b>7. Follow-up status</b>				<b>Date</b>			
Condition	Relation to patient		Age	Stop Tx (and why code)											
<input type="checkbox"/> asthma				Restart Tx											
<input type="checkbox"/> allergic conditions; eg. rhinitis, eczema				Discharged											
<b>6. Environmental exposures</b>				Transfer out											
Indoor irritants		<input type="checkbox"/> smoker in household <input type="checkbox"/> smoke/fumes from biomass fuels <input type="checkbox"/> Household aerosols <input type="checkbox"/> mold <input type="checkbox"/> dust mites		-- to where											
Outdoor irritants		<input type="checkbox"/> air pollutants/smoke <input type="checkbox"/> pollen <input type="checkbox"/> mold		Lost to follow-up											
Workplace irritants		<input type="checkbox"/> chemicals <input type="checkbox"/> air pollutants/smoke		Dead											
<b>8. Notes</b>															
<b>9. Referral out or hospitalization/emergency history for asthma or COPD</b>															
Date	Hospital/Referral	Admitted Y/N	Reason for admission	Discharge diagnosis	Discharge meds	Labs	Spirometry result	Date	Hospital/Referral	Admitted Y/N	Reason for admission	Discharge diagnosis	Discharge meds	Labs	Spirometry result

NCD Reg No.

# Asthma and COPD Card

Name

Visit date <input type="checkbox"/> Tick small box if scheduled	Follow-up visit date	Ht (cm) in box below  <input type="text"/> Wt (kg) - top BMI (kg/m <sup>2</sup> ) - bottom (Circle if obese)	Respiratory rate	Blood pressure (mmHg)	SpO2/PR	Peak Expiratory Flow Rate			Risk assessment			Signs and symptoms	Asthma/COPD severity (if both conditions, put severity for both)	Asthma Control	Pregnancy, RH/FP choices (family status)	Inhaled Salbutamol		Corticosteroids		Other treatment	Adherence-missed dose in last mo. (Y/N). If Y, why	Acute attack/Treatment given?	Refer, consult or link	Comments (incl. current plan, observations, complications and update pt history, stable/modify Rx, counselling, lab orders)  <i>Tick box if demonstration of inhaler technique done.</i>	HW Name		
						AM or PM	PEF in l/min (circle personal best, no symptoms)	PEF % personal best	Smoking in last yr. (Y/N or Quit)	Alcohol in last mo. (Y/N), # units/day	Adequate physical activity (Y/N)					Limitation of daily activities	Dose	Days/wk used	Inhaled							Oral	
<input type="checkbox"/>		kg																									
<input type="checkbox"/>		kg																									
<input type="checkbox"/>		kg																									
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## NCD patient card: asthma and COPD

<input type="checkbox"/>		kg																	<input type="checkbox"/>	
<input type="checkbox"/>		kg																	<input type="checkbox"/>	
<input type="checkbox"/>		kg																	<input type="checkbox"/>	
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<input type="checkbox"/>		kg																	<input type="checkbox"/>	
<input type="checkbox"/>		kg																	<input type="checkbox"/>	
<input type="checkbox"/>		kg																	<input type="checkbox"/>	

Stop reasons	Possible signs and symptoms	Symptom severity codes	Treat and refer for signs or symptoms of asthma or COPD attack	Reason for poor adherence to meds
<b>1</b> Medication side effects <b>5</b> Drugs out of stock <b>2</b> Drug interactions <b>6</b> Formulary change <b>3</b> Severe illness, hospitalization <b>7</b> Other (specify) <b>4</b> Medications not working	Nocturnal symptoms (days/wk) Shortness of breath Difficult Breathing Wheezing Sputum production FEVER COUGH Fatigue Palpitations or chest pain Confusion, agitation Edema Weight Loss	<b>Asthma</b> Intermittent Mild persistent Moderate persistent Severe persistent  <b>COPD</b> Mild Moderate Severe Very severe	<ul style="list-style-type: none"> <li>• Severe wheezing</li> <li>• Severe respiratory distress</li> <li>• RR &gt; 25 breaths/minute</li> <li>• HR ≥110 beats/min</li> <li>• Inability to complete sentence in 1 breath</li> <li>• Altered consciousness-confusion, agitation or lethargy associated with breathlessness</li> <li>• Exhaustion</li> <li>• Arrhythmia</li> <li>• Hypotension</li> <li>• Cyanosis</li> <li>• Silent chest</li> <li>• Poor respiratory effort.</li> <li>• SpO2 &lt;92% on pulse oximeter, if available or worsening oxygen saturation with breathing difficulty</li> <li>• Haemoptysis more than 50 ml</li> <li>• Pleuritic chest pain</li> <li>• Temperature &lt;35C</li> </ul>	<b>1</b> Forgot <b>2</b> Asleep <b>3</b> Busy <b>4</b> Change of routine <b>5</b> Travel cost <b>6</b> Distance to clinic <b>7</b> Patient lacks finances <b>8</b> Patient lost/ran out of medication <b>9</b> Stock out <b>10</b> Toxicity/side effects <b>11</b> Feels ill <b>12</b> Pill Burden <b>13</b> Felt well <b>14</b> Depression <b>15</b> Alcohol/substance abuse <b>16</b> Stigma/disclosure concerns <b>17</b> Lack of food <b>18</b> Poor palatability <b>19</b> Patient decision <b>20</b> Other <b>21</b> Patient did not know to continue
<b>Risk assessment codes</b>  <b>Waist circumference</b> in cm <b>Smoking:</b> how many cigarettes/day Alcohol: 1 unit=half pint (237ml) of beer/lager (5% alcohol); 100ml wine (10% alcohol); 25ml spirits (40% alcohol) Adequate physical activity: Y if more than 30 minutes/day x 5/ days per week (150 minutes/week). How much in minutes/week Functional status: <b>Working, Ambulatory, Bedridden</b> <b>BMI Categories</b> <18.5: <b>Underweight</b> 18.5-24.9: <b>Normal</b> ≥ 25: <b>Overweight</b> ≥ 30: <b>Obese</b>	<b>Pregnancy, Reproductive health/family planning choices, family status codes</b>  <b>P</b> =pregnant (refer). If <b>P</b> , EDD <b>BF</b> =breast-feeding <b>On FP</b> =currently using FP method <b>No FP</b> =not currently using FP method (offer)			
<b>Acute attack codes</b>  Severe Moderate Acute infection				

**Follow-up education and support for asthma and COPD** (Information on questions asked, advice/counsel given)

	DATE	DATE	DATE	DATE	DATE	DATE	DATE	DATE
<b>Educate on basics, disclosure</b>	Basic asthma or COPD education	Y N	Y N	Y N	Y N	Y N	Y N	Y N
	Family/living situation: discuss chronic environment exposures	Y N	Y N	Y N	Y N	Y N	Y N	Y N
	Reproductive choices, pregnancy and breastfeeding	Y N	Y N	Y N	Y N	Y N	Y N	Y N
	Progression of disease	Y N	Y N	Y N	Y N	Y N	Y N	Y N
<b>Treatment preparation, initiation, lifestyle modification, support, monitor</b>	Available treatment	Y N	Y N	Y N	Y N	Y N	Y N	Y N
	Lifestyle: breathing techniques	Y N	Y N	Y N	Y N	Y N	Y N	Y N
	Lifestyle: diet	Y N	Y N	Y N	Y N	Y N	Y N	Y N
	Lifestyle: physical activity	Y N	Y N	Y N	Y N	Y N	Y N	Y N
	Lifestyle: removing triggers (dust, animals, smoke)	Y N	Y N	Y N	Y N	Y N	Y N	Y N
	Lifestyle: coping strategies	Y N	Y N	Y N	Y N	Y N	Y N	Y N
	Lifestyle: tobacco cessation, reduction of harmful alcohol use	Y N	Y N	Y N	Y N	Y N	Y N	Y N
	Follow-up appointments, clinical team	Y N	Y N	Y N	Y N	Y N	Y N	Y N
	Asthma self-management: inhaler use	Y N	Y N	Y N	Y N	Y N	Y N	Y N
	Making and using a spacer	Y N	Y N	Y N	Y N	Y N	Y N	Y N
	Why complete adherence needed	Y N	Y N	Y N	Y N	Y N	Y N	Y N
	Adherence preparation, indicate visits	Y N	Y N	Y N	Y N	Y N	Y N	Y N
	Explain dose, when to take	Y N	Y N	Y N	Y N	Y N	Y N	Y N
	What can occur, how to manage side effects	Y N	Y N	Y N	Y N	Y N	Y N	Y N
	What to do if one forgets dose	Y N	Y N	Y N	Y N	Y N	Y N	Y N
	What to do when travelling	Y N	Y N	Y N	Y N	Y N	Y N	Y N
	Adherence plan (schedule, aids, explain diary)	Y N	Y N	Y N	Y N	Y N	Y N	Y N
	Treatment supporter preparation	Y N	Y N	Y N	Y N	Y N	Y N	Y N
<b>Home-based care, support</b>	Which doses, why missed	Y N	Y N	Y N	Y N	Y N	Y N	Y N
	How to contact clinic	Y N	Y N	Y N	Y N	Y N	Y N	Y N
	Symptom management at home	Y N	Y N	Y N	Y N	Y N	Y N	Y N
	Caregiver booklet	Y N	Y N	Y N	Y N	Y N	Y N	Y N
	Home-based care -- specify	Y N	Y N	Y N	Y N	Y N	Y N	Y N
	Support groups	Y N	Y N	Y N	Y N	Y N	Y N	Y N
Community support	Y N	Y N	Y N	Y N	Y N	Y N	Y N	

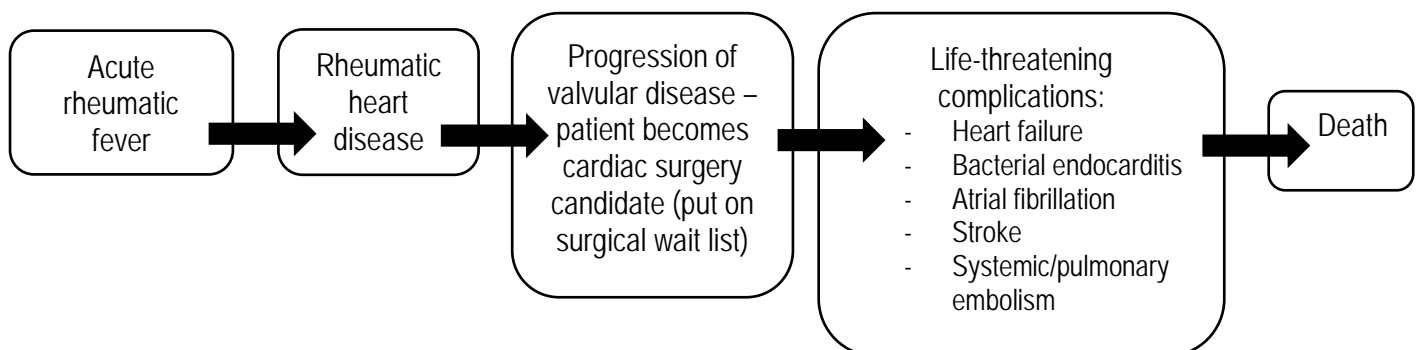
# PROTOCOL 3: MANAGEMENT OF RHEUMATIC FEVER AND RHEUMATIC HEART DISEASE

## 1.1. Primary health care support for patients with RF/RHD

This protocol assumes that a diagnosis of rheumatic fever (RF)/rheumatic heart disease (RHD) has been made by a cardiologist or by a trained health worker at Health Centre IV or hospital. This protocol describes just the follow-up at primary health care level. Primary health care close to home makes it possible to provide monthly secondary prophylaxis (usually intramuscular injections of benzathine penicillin) and other medicines prescribed by that clinician. Care needs to be coordinated with the cardiologist or experienced hospital clinician by referring back for periodic examinations, ECG, echocardiograms or other examinations usually not available at primary health care level.

The diagnosis is generally made based on clinical history and examination. Rheumatic heart valve damage on echocardiographic findings can confirm the diagnosis of RHD and characterize the valve problems and whether there is heart failure. Electrocardiogram (ECG) can detect atrial fibrillation and other complications.

Rheumatic heart disease often progresses over years and can lead to heart failure and other serious complications requiring repeated hospitalization, and premature death if not treated.



## 1.2. Goals of the monthly visit for prophylaxis for Rheumatic fever/Rheumatic heart disease

1. Assess symptoms
  - Identify any acute problems
  - Recognize deterioration of the patient's cardiac condition
  - Recognize recurrence of acute rheumatic fever or acute sore throat, suspect streptococcal pharyngitis
2. Refer as needed
3. Give secondary prophylaxis
4. In women of childbearing age, counsel on the risk of pregnancy if the patient has valvular disease and offer contraception
5. Schedule follow-up
6. Check understanding

## 2.1. Assess signs and symptoms

If any acute problem, first do acute assessment (use IMAI-PEN Acute Care).

For all patients:

ASK:	LOOK, LISTEN
<ul style="list-style-type: none"> <li>• Shortness of breath?</li> <li>• Swelling of lower extremities?</li> <li>• Sore joints?</li> <li>• Fever?</li> <li>• Excessive clumsiness and altered handwriting?</li> <li>• Sore throat?</li> <li>• Any other problem?</li> </ul>	<p>Measure BP, pulse, weight</p> <p>If shortness of breath or lower extremity oedema</p> <ul style="list-style-type: none"> <li>• Auscultate heart for heart murmur or irregular rhythm</li> <li>• Auscultate lungs for crackles</li> </ul> <p>If complains of sore joints-</p> <ul style="list-style-type: none"> <li>• Feel ankles, knees, hips, wrists, elbows, shoulders for:               <ul style="list-style-type: none"> <li>○ Redness</li> <li>○ Warmth</li> <li>○ Swelling</li> <li>○ Tenderness</li> </ul> </li> </ul> <p>If reports fever-</p> <ul style="list-style-type: none"> <li>• Measure temperature</li> </ul> <p>If sore throat-</p> <ul style="list-style-type: none"> <li>• Assess and treat suspect streptococcal pharyngitis (see Acute Care)</li> </ul>

**2.2 If any signs suggesting recurrent rheumatic fever or new/worsening heart failure or new atrial fibrillation, refer urgently to hospital**

Signs and symptoms suggesting <b>new or worsening heart failure</b>	Signs and symptoms suggesting <b>recurrent acute rheumatic fever</b>	Signs suggesting new <b>atrial fibrillation</b>
<ul style="list-style-type: none"> <li>• Chest pain or discomfort</li> <li>• Fatigue</li> <li>• Crackles/crepitations on auscultation</li> <li>• Shortness of breath, may be worse when lying down</li> <li>• Swelling of lower extremities</li> <li>• Acute increase in weight</li> </ul>	<ul style="list-style-type: none"> <li>• Fever</li> <li>• Joint pain and swelling - usually the large joints; "migratory"- more than one joint involved, new joint becomes painful as others improve</li> <li>• Rapid heart rate – out of proportion to fever</li> </ul>	<ul style="list-style-type: none"> <li>• Irregular heart rate</li> </ul>



	<ul style="list-style-type: none"> <li>• New heart murmur or pericardial friction rub</li> <li>• Fatigue, new shortness of breath</li> <li>• Abnormal movements- involuntary, uncoordinated, purposeless</li> </ul>	
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## 2.3 Give benzathine penicillin injection IM (or erythromycin if penicillin allergic).

Record this and other medicines on patient card

Benzathine penicillin dose 1.2 million units benzathine penicillin every 4 weeks.  
If less than 30 kg: 600 000 U IM every 4 weeks

## 2.4 In women of childbearing age, counsel on the risk of pregnancy if the patient has valvular disease and offer contraception

## 2.5 Schedule follow-up visits-

-For injection every 4 weeks

-With cardiologist at Regional Referral Hospital to confirm diagnosis then yearly(?)

## 2.6 Check understanding of need for prophylaxis and educate as necessary

- Ensure antibiotic prophylaxis for endocarditis before dental and invasive surgical procedures.

### Each month:

- Review all patient cards even if the patient is absent.
- Trace patients from clinic who have missed prophylaxis every month.

## HOW TO FILL OUT THE NCD PATIENT CARD: RHEUMATIC FEVER/ RHEUMATIC HEALTH DISEASE PROPHYLAXIS AND CARE

### Instructions for filling in the form:

1. Fill in top of card- district, health unit, enrolment date, cohort year, national ID and NCD ID nos. Next fill in the patient's name, age, sex, date of birth, address, supporter information, and community health worker information (if available). This can be done by any member of the health care team at initiation and update as needed.
2. Fill in patient overview box. Tick the diagnosis at enrolment. If patient has had a valve replacement, record, and update as needed. Fill in patient history and complications. These can be updated over time.
3. Fill in drug allergies, including the reaction that occurs with the drug allergy.
4. Record the other conditions that the patient may have (comorbidities) and linkages to these clinics. Add the date of diagnosis and the card number. Some patients will have both this RHD card and an NCD card for following their hypertension or diabetes, or an HIV care/ART card.
5. Fill in the medications that the patient is taking.
6. Record and update on follow-up status as needed.
7. Fill in important laboratory and investigations that the patient has had done for diagnosis and while in care. This information will be based on the referral data from the managing cardiologist or trained district clinician including results of recent cardiology consults, investigations or recent hospitalizations/referrals.
8. Fill out any labs that may have come with patient, given to you by the laboratory or that you have obtained through point of care testing.
9. Turn the page to the encounter pages, fill out visit date. If patient has been referred to the health centre from another facility or the community, information may be filled out in the first encounter row and indicate "referral" or "transfer in" to the left of the visit date. If scheduled follow-up visit, tick box.
10. Fill in patient height in box, weight on encounter line and calculate BMI and write below weight on same encounter line. Circle BMI if obese category.
11. Record vitals- blood pressure, temperature, SpO<sub>2</sub>, pulse (note if irregular).
12. Record patient's response to questions about tobacco and alcohol use. The rest of this page can be filled out by the clinical health worker (HW).
13. The health worker should now be able to fill out the rest of the first page including the patient's pertinent medical history such as history or prior cardiovascular disease as well as other medical problems, any remaining investigations or recent hospitalizations/referrals.
14. Record patient's pregnancy status and family planning if woman of child-bearing age
15. HW can fill in any symptoms or concerns that the patient may have. Possible symptoms and signs are listed in the codes on the next page.
16. Record patient's pregnancy status if woman of child-bearing age
17. Fill in appropriate treatment plan in the medications column and include medicine name if fill in line and dose. If for some reason, the HW needs to stop the medication, record "STOP" and why in the column.
  - For secondary prophylaxis, circle the dose of benzathine penicillin 600,000 or 1.2 million IU OR erythromycin (insert dose) and put a tick in the column when patient has received this.
  - If the cardiologist or trained district clinician has prescribed medicine for heart failure, hypertension, anticoagulants (for atrial fibrillation or after heart surgery), list these medicines and record what the patient is taking.
18. If patient is already on treatment but has poor adherence, the HW can use the "patient poor adherence reasons" to fill in why the adherence is poor.

19. The HW should also document any referrals or urgent management and any other notable issues in the comments column.
20. Once a treatment plan is made and HW schedules a follow-up, record the date in next follow-up line and put HW name in encounter line.
21. The back counselling and education page can be filled out by any member of the health care teams- this includes ancillary staff, community health worker, the doctor or the nurse.





# Rheumatic fever/rheumatic heart disease prophylaxis and care card

National ID No. 

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District: \_\_\_\_\_

Health unit: \_\_\_\_\_

At enrolment: Date: / /

Cohort year: 20

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<b>1. Patient/Guardian details</b>				<b>2. Patient overview RHD</b>				<b>Cohort year:</b>									
Patient name				Diagnoses		<input type="checkbox"/> Acute rheumatic fever		Date:		<input type="checkbox"/> Rheumatic heart disease		Date:		<input type="checkbox"/> Mechanical valve replacement		Date:	
Pt file #		Age		Birth M/Y		<input type="checkbox"/> M <input type="checkbox"/> F		Patient history and complications		<input type="checkbox"/> Recurrent acute rheumatic fever <input type="checkbox"/> Date: <input type="checkbox"/> Date:							
Physical address Village: Parrish: Subcounty: Nearby health facility:				Cardiovascular complications		<input type="checkbox"/> cardiac failure, m/y: <input type="checkbox"/> atrial fibrillation, m/y: <input type="checkbox"/> Systemic embolism, m/y: <input type="checkbox"/> angina, m/y: <input type="checkbox"/> infective endocarditis, m/y:				<input type="checkbox"/> Valve lesion <input type="checkbox"/> mitral stenosis <input type="checkbox"/> mitral regurgitation <input type="checkbox"/> aortic stenosis <input type="checkbox"/> aortic regurgitation							
						Cerebrovascular complications				<input type="checkbox"/> stroke, m/y:     TIA, m/y							
Patient phone				Cardiac surgery candidate						Date on wait list:		Which valves:					
Guardian/Supporter		Name		Phone		Discharge from 2 <sup>nd</sup> prophylaxis				Date:							
<b>4. Co-morbidities (circle)</b>				<b>3. Drug allergies/ contraindication</b> <i>(block out drugs on encounter page)</i>													
Yr		Card#		Notes		<b>5. Other medications</b> (including ARVs)											
Diabetes				<input type="checkbox"/> Type 1 <input type="checkbox"/> Type 2		<b>7. Baseline, f/up external exams - Date</b>		Cardiology/LABS (anti-streptolysin/ anti-DNase)		Echocardiogram		ECG results					
HIV				ART? Date start													
Asthma/COPD																	
Substance use																	
Depression, other mental health																	
Other:																	
<b>6. Follow-up Status</b>				<b>Hospitalization for RF or RHD</b>				<b>Date/Length of Stay:</b>									
Transfer out				Date		Reason for admission:		Discharge diagnosis:		Discharge meds.							
--- to where																	
Lost to follow-up*																	
Dead																	
*Not seen in 1 year since last missed appointment																	
<b>8. Initial visit and every 3 months</b>										<b>Notes</b> (with date on left)							
Date	Hb	Creatin-ine	Blood glucose	Other (specify)		Date	Hb	Creatin-ine	Blood glucose	Other (specify)		Hep B					

NCD Reg No.

**Rheumatic fever/rheumatic heart disease prophylaxis and care CARD Name** \_\_\_\_\_

Visit date <input type="checkbox"/> Tick box if scheduled	Follow-up visit date	Ht (m) in box below <input type="text"/>	Wt (kg) - top BP	BMI (kg/m <sup>2</sup> ) - bottom - see codes	Temp/ Pulse rate	SpO2	Smoking in last yr (Y/N or Quit)	Alcohol in last yr (Y/N), #units/d	If woman child-bearing age, Pregnancy, RH/FP choices (family status)	Signs and symptoms	Meds (record STOP, why if health worker stops meds-see codes)										Urgent mgmt, refer, consult or link	Comments (incl. complications and update pt history, stable/modify rx) -see management plan codes	Cardiac clinic follow-up/ echo date	Health worker name					
											Secondary prophylaxis (TICK)		Heart failure, antiHTN meds			Anti-coagulation		Other meds											
											Benzathine PCN 600,000 IU	Benzathine PCN 1.2 million IU	Erythromycin, dose .....if PCN allergic)	Furosemide				Type, dose:	INR										
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**NCD patient card: rheumatic fever/rheumatic heart disease prophylaxis and care**

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<b>Health worker stop codes</b>		<b>Medications codes</b>		<b>Patient poor adherence codes</b>		<b>Management plan</b>	
<p>1 Medication side effects      5 Drugs out of stock</p> <p>2 Drug interactions                6 Formulary change</p> <p>3 Severe illness, hospitalization    7 Other (specify)</p> <p>4 Medications not working</p>		<p>Write in name at top, and dose in rows for:</p> <p><b>Heart failure medicines</b>  <b>Dig</b>= digoxin  <b>FUR</b> = furosemide  <b>SPIR</b> = spironolactone</p> <p><b>Anti-hypertensives</b>                  CCB=calcium channel blocker  <b>amlo</b>=amlodipine,  <b>nifed</b>=nifedipine                  BB=beta blocker (also to lower heart rate in atrial fibrillation) – <b>atenolol bisoprolol, metoprolol, carvedilol</b>                  ACE= angiotensin converting enzyme inhibitor- <b>enalapril, captopril, ramipril</b>;                  ARB=angiotensin receptor blocker- <b>losartan, telmisartan, valsartan</b></p> <p><b>Anticoagulants</b>  <b>W</b>=warfarin  <b>ASA</b> = aspirin</p>		<p>1 Forgot                  2 Asleep                  3 Busy                  4 Change of routine                  5 Travel cost                  6 Distance to clinic                  7 Patient lacks finances                  8 Patient lost/ran out of pills                  9 Stock out                  10 Toxicity/side effects                  11 Feels ill                  12 Pill burden                  13 Felt well                  14 Depression                  15 Alcohol/substance abuse                  16 Stigma/disclosure concerns                  17 Lack of food                  18 Poor palatability                  19 Patient decision                  20 Other (specify)</p>		<p><b>Medical</b> management of cardiac lesion  <b>Anticoagulation</b> – fill in Meds  <b>Valve</b> repair                  Mechanical valve <b>replacement</b>                  -- on <b>waiting</b> list                  -- record date booked for surgery  <b>BMV</b> = balloon mitral valvuloplasty</p>	
<b>BMI codes</b>		<b>Tobacco</b>					
<18.5: <b>Underweight</b> 18.5-24.9: <b>Normal</b> 25-29.9: <b>Overweight</b> ≥30: <b>Obese</b>		<p><b>Smoking:</b> how many cigs/ day                  Other tobacco use?</p>					
<b>Signs and symptoms codes</b>		<b>INR</b>				<b>Pregnancy, RH/FP choices, family status codes</b>	
Fever Joint pain Oedema Shortness of breath (NYHA I-IV) Palpitations Orthopnoea PND Paroxysmal Nocturnal Dyspnoea Chest pain/angina		<p><b>Goal 2-3</b>                  If INR not at goal, ASK:                  1) Diet-any major changes (fasting)?                  2) Drugs- any medicine changes?                  3) Dose- confirm warfarin dose? Missed?                  4) Disease-any recent illness?</p>				<p><i>If woman of childbearing age:</i>  <b>P</b>=pregnant (refer). If <b>P</b>, <b>EDD</b>  <b>BF</b>=breast-feeding  <b>On FP</b>=currently using FP method  <b>No FP</b>=not currently using FP method (offer)</p>	

Follow-up education and support for rheumatic fever/rheumatic heart disease prophylaxis and care

	Date	Date	Date	Date	Date	Date	Date	Date	Date
<b>Educate on basics, healthy lifestyle</b>	Basic symptoms of RF/RHD education	Y N	Y N	Y N	Y N	Y N	Y N	Y N	Y N
	Dental health education	Y N	Y N	Y N	Y N	Y N	Y N	Y N	Y N
	Lifestyle: physical activity (how much)	Y N	Y N	Y N	Y N	Y N	Y N	Y N	Y N
	Lifestyle: weight loss	Y N	Y N	Y N	Y N	Y N	Y N	Y N	Y N
	Lifestyle: tobacco cessation	Y N	Y N	Y N	Y N	Y N	Y N	Y N	Y N
	Lifestyle: reduction of hazardous or harmful alcohol use	Y N	Y N	Y N	Y N	Y N	Y N	Y N	Y N
	Reproductive choices, pregnancy and breastfeeding	Y N	Y N	Y N	Y N	Y N	Y N	Y N	Y N
	Progression and complications of disease	Y N	Y N	Y N	Y N	Y N	Y N	Y N	Y N
<b>Treatment: preparation, initiation, modification and ongoing support, monitor</b>	Treatment availability	Y N	Y N	Y N	Y N	Y N	Y N	Y N	Y N
	Follow-up appointments, clinical team	Y N	Y N	Y N	Y N	Y N	Y N	Y N	Y N
	Why complete adherence needed	Y N	Y N	Y N	Y N	Y N	Y N	Y N	Y N
	Adherence preparation, ongoing support, indicate visits	Y N	Y N	Y N	Y N	Y N	Y N	Y N	Y N
	Adherence plan (schedule, aids, explain diary)	Y N	Y N	Y N	Y N	Y N	Y N	Y N	Y N
	Treatment supporter preparation	Y N	Y N	Y N	Y N	Y N	Y N	Y N	Y N
	Possible side effects, how to manage side effects, discuss current side effects	Y N	Y N	Y N	Y N	Y N	Y N	Y N	Y N
	What to do if one forgets dose	Y N	Y N	Y N	Y N	Y N	Y N	Y N	Y N
	What to do when travelling	Y N	Y N	Y N	Y N	Y N	Y N	Y N	Y N
	Explain dose, when to take, check patient understanding of treatment (dosage)	Y N	Y N	Y N	Y N	Y N	Y N	Y N	Y N
	Which doses, why missed	Y N	Y N	Y N	Y N	Y N	Y N	Y N	Y N
	How to contact clinic, what to do in emergency	Y N	Y N	Y N	Y N	Y N	Y N	Y N	Y N
<b>Home-based care, support</b>	Adherence support, symptom management at home, caregiver booklet	Y N	Y N	Y N	Y N	Y N	Y N	Y N	Y N
	Home-based care -- specify	Y N	Y N	Y N	Y N	Y N	Y N	Y N	Y N
	Community support, support groups	Y N	Y N	Y N	Y N	Y N	Y N	Y N	Y N



# ANNEX A. EDUCATION AND SUPPORT GUIDELINES-For all patients enrolled in chronic care at each visit- use the applicable sections based on patient diagnosis and treatment status

## Lifestyle interventions

The components of implementing lifestyle changes include the following:

- Promote a heart healthy diet for all patients
- Increase physical activity
- Reduce risk- stop tobacco and avoid harmful use of alcohol

### A1 Heart Healthy Diet for all patients

#### Salt

- Reduce salt to less than 5 grams (1 teaspoon) per day
- Use less salt when cooking
- Limit processed foods e.g. cakes, biscuits, soda drinks

#### Fruits and vegetables

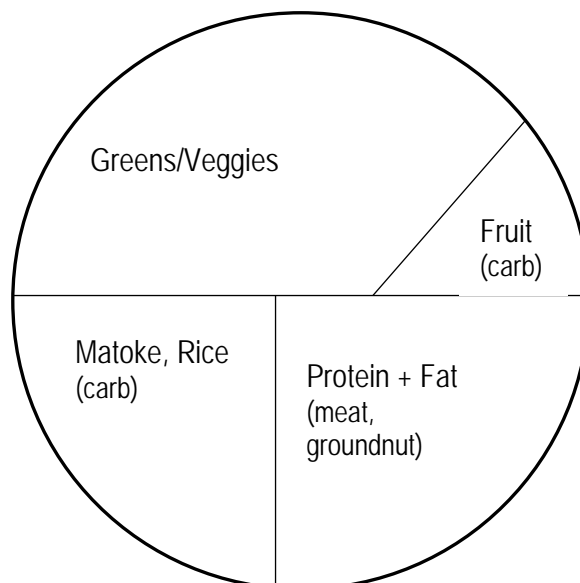
- Eat 5 servings (400-500 grams) of fruits and vegetables per day
- 1 serving is the same as 1 orange, apple, mango, banana or ½ cup of cooked vegetables or 1 cup raw vegetables. Potatoes, sweet potatoes, cassava and other starchy roots are not included as fruits or vegetables.

#### Fatty Food

- Limit fatty meat, dairy fat and cooking oil to less than 2 tablespoons per day
- Replace palm and coconut oil with olive, soya, corn, sunflower oil
- Replace other meat with chicken (without skin) or fish.
- Limit fried foods

### Uganda Diabetic Plate

### Uganda Diabetic Plate



## **A2 Additional dietary advices for patients with hypertension**

- Eat vegetables raw, boiled or steamed at home and seasoned with spices other than salt.
- Avoid table salt and reduce salty foods e.g. pickles, salty fish, processed food, canned food or stock cubes.

## **A3 Additional dietary advice for patients with high cholesterol levels**

- Reduce fat in the diet by limiting foods high in lipids (e.g. organ meats, egg yolks, dairy such as milk). Change cooking oil to vegetable- based oil and boil, steam or bake foods rather than fry.
- Restrict meat portion sizes.
- Eat more fibre-rich foods (vegetables, fruit)
- Reduce weight if overweight or obese (see A7)
- Increase regular physical activity. This can help increase the production of the good cholesterol
- Add phytosterols (plant equivalent of cholesterol) e.g. nuts, vegetable oils ~ 2 gram/day

## **A4 Additional dietary advice for patients with diabetes mellitus**

- All members of the primary health care team should have knowledge about appropriate dietary requirements for patients with diabetes based on locally available foods.
- Dietary restrictions should be moderate yet provide a balanced nutrition.
- Patients should eat at least three meals a day with healthful non-processed foods with controlled portion sizes; they should avoid binge-eating. The diet should be individualised, based on traditional eating patterns, be palatable and affordable.
- Advise all patients to have diets with low glycaemic-index foods e.g. beans, lentils, whole fruit
- Added sugar in foods and drinks should be avoided e.g. sweet drinks like sodas.
- Meals should have a high content of greens and vegetables, fibre, some complex carbohydrates such as matoke (starches), and protein (beans, peas, fish, chicken without skin; limit beef). A limited numbers of fruits per day should be encouraged. Reduce on portions of posho and rice. See the Ugandan diabetic plate.
- Food quantities should be estimated in volumes using available household items, such as cups, or be countable, such as number of fruits or slices of yam or bread.
- Artificial sweeteners are not essential but may be used.
- If on any DM medications that may cause the blood sugar to go down too low, it is important to carry sugar or sweets especially when active.
- ***Simple explained and written dietary instructions should be provided.***

### **A5 Physical activity for all patients**

All patients should engage in regular physical activity

- Progressively increase physical activity to moderate levels such as brisk walking, work-related physical activity, and daily tasks
- At least 150 minutes per week or 30 minutes of physical activity for 5 days a week

### **A6 Additional considerations for physical activity in diabetics**

- Advise on wearing proper footwear when exercising.
- Physical activity is good for people with diabetes as it can help to lower blood glucose. It is important to know how your body is affected by exercise especially if you are on medications. To prevent your blood glucose from going too low when you are active, carry snacks and also make sure to drink plenty of water.

### **A7 Additional lifestyle advice – obesity**

- Both generalized and abdominal (central obesity) are associated with increased risk of morbidity and mortality.
- Advise weight loss through reduction in food/caloric intake and increasing physical activity.

#### **If overweight or obese:**

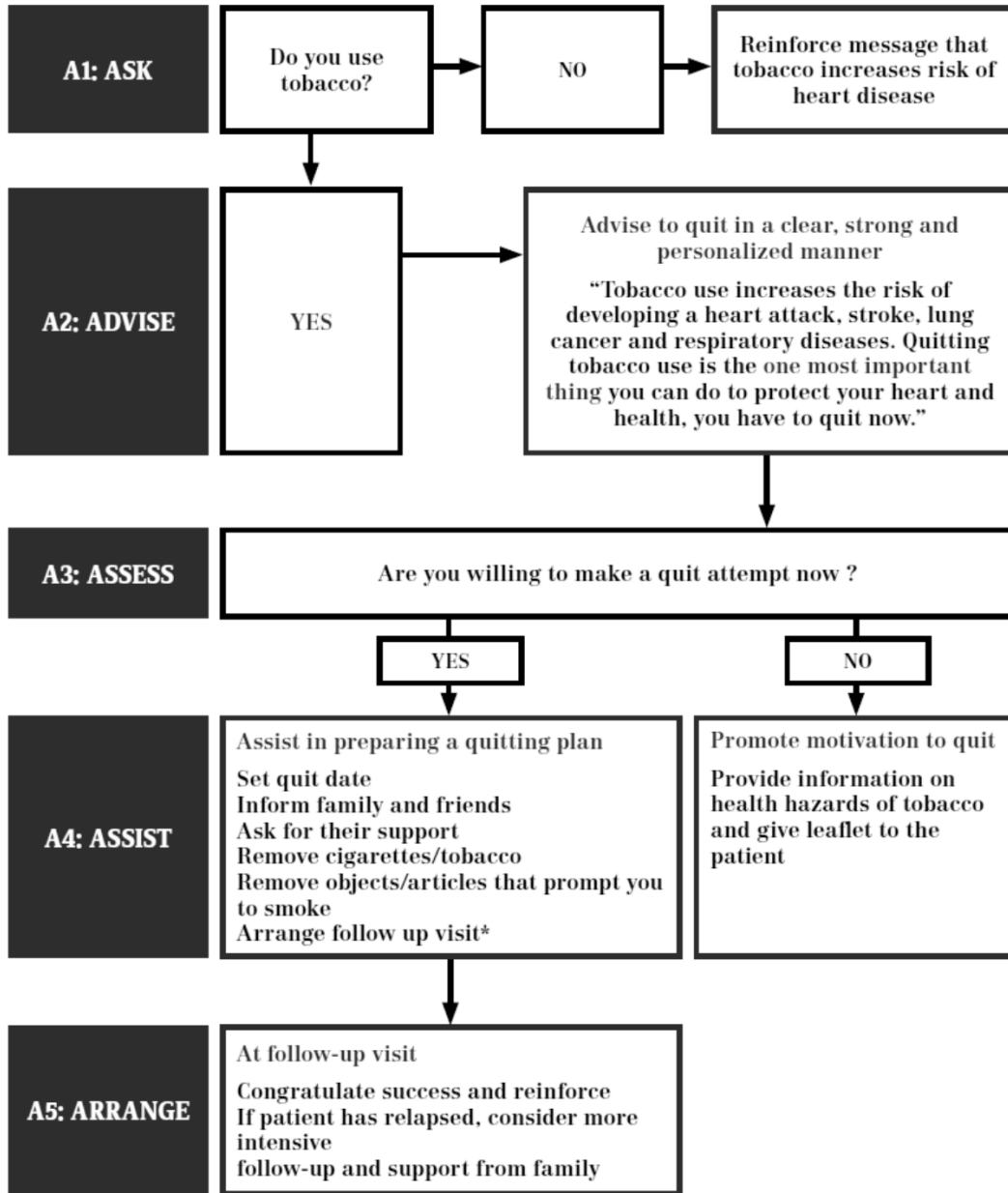
- Weight loss programmes are best done by a team approach. The HW should provide a consultation to the patient regarding diagnosis and diet/activity advice, followed by additional consultation with another member of the team to provide further education on diet and physical activity tailored to the patient. This could be done by auxiliary staff, a nutritionist or lay provider.
- Discuss a weight loss goal-if BMI is >30, a reasonable goal would be losing 5% of original weight over one year.
- Explain energy intake (calories) and energy expenditure (physical activity)
- Follow healthy diet (see above). Limit foods and drinks with high amounts of free sugar (sugar-sweetened beverages, sugary snacks and candies)
- Trim excess calories e.g. reduce portion, eliminate bread, extra snacks, choose calorie-free beverages

### **A8 Stop tobacco and avoid harmful use of alcohol-for all patients**

Educate on long term health risks of tobacco and/or heavy alcohol use (COPD, lung cancer, cardiovascular disease, stroke, liver disease, and other cancers)

- Encourage all non-smokers not to start smoking
- Strongly advise all smokers to stop smoking and support them in their efforts- Use the 5 As.
- Individuals who use other forms of tobacco should be advised to quit
- People should not be advised to start taking alcohol for health reasons
- 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 controlling drinking

## A9 Tobacco cessation



\* Ideally second follow-up visit is recommended within the same month and every month thereafter for 4 months and evaluation after 1 year. If not feasible, reinforce counseling whenever the patient is seen for blood pressure monitoring.

Source: WHO PEN 2013

## A10 Reduce harmful alcohol use or dependence: 5 As

### Assess

If person says YES to drinking alcohol daily or frequently:

- ❖ Has the person had 6 or more drinks (60 grams alcohol) on any given occasion in the last 12 months or drinks daily?

If YES, ask the following questions to find out if the person's alcohol use is harmful:

- ❖ **ASK:** *Does your alcohol use cause you any problems?*
  - Injuries and accidents
  - Driving while intoxicated
  - Relationship problems as a result of use
  - Sexual activity while intoxicated that was risky or later regretted
  - Legal or financial problems
  - Inability to care for children responsibly
  - Violence towards others
  - Poor performance in education, employment roles
  - Poor performance in expected social roles (e.g. parenting)

If YES, determine if **dependence** is likely, ask do they have:

- High levels of **frequent use** (i.e. more than 6 standard drinks at a time, and daily use)
- A **strong craving** or sense of compulsion to use the substance
- Difficulty **self-regulating** the use of that substance despite the risks and harmful consequences
- Increasing levels of use **tolerance** and **withdrawal** symptoms on stopping

*Note that if a person is drinking 6 or more drinks a day, it is highly likely he or she is alcohol dependent. More formal assessment may be done by the use of a questionnaire such as the WHO-AUDIT or WHO-ASSIST.*

### Advise

If harmful alcohol use or alcohol dependent:

- State clearly the recommendation to either cut down to safer levels or stop using alcohol completely and your willingness to help the person to do so.
- If person is alcohol dependent, assess the person's risk for severe withdrawal for planned alcohol cessation and refer for inpatient detoxification, if necessary:
  - Past episodes of severe withdrawal symptoms, including seizures or delirium?
  - Other significant medical or psychiatric issues
  - Withdrawal symptoms develop within 6 hours of the person's last drink?
  - Have outpatient cessation attempts failed in the past?
  - Is the person homeless or without and social support?

<b>Agree</b>	<p>Talk with the person about the reasons they use alcohol:</p> <ul style="list-style-type: none"> <li>• Engage the person in a discussion about their alcohol use in a way that he / she is able to talk about both the perceived benefits of it and the actual or potential harms, taking into consideration the things that are most important to that person in life.</li> <li>❖ Steer the discussion towards a balanced evaluation of the positive and negative effects of alcohol by challenging overstated claims of benefits and bringing up negative aspects which are being understated.</li> <li>❖ Avoid arguing with the person. Phrase something in a different way if it meets resistance. Seek to understand the real impact of alcohol in the person's life as much as is possible.</li> <li>❖ Encourage the person to decide for themselves if they want to change their pattern of alcohol use, after there has been a balanced discussion of the pros and cons of the current pattern of use.</li> <li>❖ <u>If</u> the person is willing to try to cut down or stop using alcohol, then discuss ways to achieve this objective.</li> <li>❖ <u>If not</u>, communicate confidently that it is possible to stop or reduce hazardous or harmful alcohol use and encourage the person to come back if he or she wants to discuss the issue further.</li> </ul>
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<b>Assist</b>	<p>Provide examples of ways that the harmful use of alcohol can be reduced</p> <ul style="list-style-type: none"> <li>❖ not having alcohol at home</li> <li>❖ not going to pubs or other locations where people use alcohol</li> <li>❖ asking support from family or friends</li> <li>❖ asking the person to come back with family or friends and to discuss a way forward together.</li> </ul>
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<b>Arrange</b>	<ul style="list-style-type: none"> <li>❖ Follow up visit.</li> <li>❖ Consider advising people with alcohol dependence to join a self-help group, e.g. Alcoholics Anonymous or refer to another source of assistance. Consider facilitating initial contact, for example by making the appointment and having someone accompany the person to the first session.</li> </ul>
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## Provide education about chronic disease diagnosis

Patient may have more than one.

### **A11 What is DIABETES?**

- Diabetes occurs when the body does not process the glucose (sugar) in the diet.
- Diabetes is diagnosed when the glucose measured in the blood is elevated. This could lead to symptoms such as urinary frequency including at night, feeling excessive hunger or thirst, weight loss, poor wound healing or burning sensation/pain in the extremities.
- If not controlled, diabetes could lead to problems such as kidney failure, vision problems or blindness, foot infection to the point of amputation, and heart disease such as heart attack or stroke, or death

### **A12 What is HYPERTENSION?**

- Hypertension is diagnosed as having high blood pressure usually on two separate visits.
- Hypertension is diagnosed when:
  - Systolic Blood Pressure (SBP)  $\geq 140$ mmHg SBP and/or
  - Diastolic Blood Pressure (DBP)  $\geq 90$  mmHg DBPOr you may be started on treatment for a lower BP target  $\leq 130/80$  if you have high cardiovascular disease risk ( $\geq 30\%$ ) or diabetes or history of prior cardiovascular disease such as heart attack or stroke
- If blood pressure is not controlled, this could lead to problems such as heart disease e.g. heart attack or heart failure, stroke (where a person may have leg weakness or paralysis), kidney problems or vision problems or death.

## Patient preparation, education and support for treatment

Counsel on acknowledgement that they have a chronic condition and that self-management is essential to treatment and help them gain the skills for self-management.

### **A13 For all patients with diabetes**

- It is important for the patient to identify/acknowledge that they have diabetes. Self-management is essential for successful management of diabetes.
- A decision should be made on who else should know and why (e.g. family member, employer, responsible adult, school). Disclosure is necessary for psychosocial support and help with lifestyle changes. Explain that if you have severe hypoglycaemia (low blood sugar level) and unable to help yourself, these people may give you the emergency treatment of administration of glucose or glucagon and take you to the nearest health facility

- Diabetes education provides the patient and their family with the knowledge and skill that empowers them to provide self-care in the management of their diabetes and associated conditions.
- Patient education is one of the cornerstones of management together with diet, physical activity and pharmacotherapy, and is critical in improving the outcome.

**Empowerment of people with diabetes includes their having:**

- a broad knowledge of diabetes and its complications, and
- the right attitude and resources to provide appropriate self-care.
- patients should know their blood glucose level. They should keep a patient log book

**People with diabetes and their families need to know:**

- that diabetes is serious, but can be controlled
- about complications and that they can be prevented
- that the cornerstones of therapy include: education, what foods to eat, how much and how often to eat, how to exercise and its precautions, how and when to take medications
- their metabolic and blood pressure targets
- how to look after their feet and prevent ulcers and amputations (A14)
- how to avoid other long-term complications
- that regular medical check-ups are essential
- when to seek medical help, e.g. how to identify hypoglycaemic and hyperglycaemic emergencies and symptoms, as well as signs of chronic complications.
- Need to take meals at regular intervals and appropriate portions.
- Need to take the medications for diabetes at the prescribed times.
- Need for complete adherence to other daily treatments, especially medications for high blood pressure and/or high cholesterol.
- The need to always carry a card to identify you as diabetic in case of emergencies, especially if you develop hypoglycaemia and go into coma.



### **A14 Advise on foot care for all diabetics to prevent wounds and ulcers from developing.**

Explain that if sugar is not well controlled in diabetics, it can lead to reduced sensation in the feet. Diabetics may not realize if they develop a cut or wound which may be slow to heal. This can lead to complications such as infection and amputation. Foot hygiene and regular foot exams by your health worker are very important.

#### ***Foot hygiene***

- 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**

### **A15 If using insulin**

- Discuss fears about starting insulin therapy and provide guidance
- Risks of hypoglycaemia associated with exercise, change in dietary pattern (e.g. skipping meals, fasting) and sickness particularly associated with vomiting and diarrhoea.
- Symptoms of hypoglycaemia include: irritability, shakiness, excessive sweating, hunger, headache and cold clammy hands, dizziness, blurry vision and can progress to confusion and unconsciousness. What to do should they experience symptoms suggestive of hypoglycaemia- eat sugar or sweets immediately
- Demonstrate how to rotate injection sites
- Safe disposal of needles/syringes used in those taking insulin injections is important. Patients should be guided to use puncture-proof containers or sharps container with disposal at designated sites.
- Unused insulin may be stored at 2-8°C in a refrigerator where available. In hot climates where refrigeration is not available, it is recommended that it can be kept at health facility.
- Avoid direct sunlight or extreme heat

### **A16 For all patients on antihypertensive medication**

- Antihypertensives are effective medications that can help with BP control.
- It is important to take these medications every day.
- The patients should know their BP level. They should keep a patient log book
- Teach the consequences of uncontrolled blood pressure.
- They should request a BP measurement at each visit.
- They should know names and dosage of their drugs.
- Return with their drug containers at each visit.
- Take blood pressure tablets before clinic visit.
- Monitor side effects of medication.
- Advise that hypotension can occur with any blood pressure medication. If this occurs, you may feel dizzy or even faint. Immediately make sure to sit down and drink plenty of fluids. Contact your health worker if you feel dizzy or weak on your medicines.
- Advise on other side effects specific to the medication that they are taking e.g. cough in ACE inhibitors.

# A17 Assess for depression

## COMMON PRESENTATIONS OF DEPRESSION

- Multiple persistent physical symptoms with no clear cause
- Low energy, fatigue, sleep problems
- Persistent sadness or depressed mood, anxiety
- Loss of interest or pleasure in activities that are normally pleasurable

1

**Does the person have depression?**

**Has the person had at least one of the following core symptoms of depression for at least 2 weeks?**

- Persistent depressed mood
- Markedly diminished interest in or pleasure from activities

Depression is unlikely

>> Go to >> OTH

No

Yes

**Has the person had several of the following additional symptoms for at least two weeks:**

- Disturbed sleep or sleeping too much
- Significant change in appetite or weight (decrease or increase)
- Beliefs of worthlessness or excessive guilt
- Fatigue or loss of energy
- Reduced concentration
- Indecisiveness
- Observable agitation or physical restlessness
- Talking or moving more slowly than usual
- Hopelessness
- Suicidal thoughts or acts

Depression is unlikely

>> Go to >> OTH

No

Yes

**Does the person have considerable difficulty with daily functioning in person, family, social, educational, occupational or other areas?**

Depression is unlikely

>> Go to >> OTH

No

Yes

**Consider DEPRESSION**

## Provide education about chronic disease diagnosis for asthma and COPD

### **A18 What is ASTHMA?**

- Asthma occurs when the airways of the lungs get inflamed. This can be due to triggers such as allergies. People experience symptoms when the airways tighten.
- It causes recurring wheezing, chest tightness, shortness of breath and coughing.

### **A19 What is COPD?**

- COPD or chronic obstructive pulmonary disease is a progressive disease of the lungs that makes it hard to breathe. Smoking is the leading cause of COPD.
- COPD causes coughing with sputum production, wheezing, shortness of breath, and chest tightness.

### **Patient preparation, education and support for treatment**

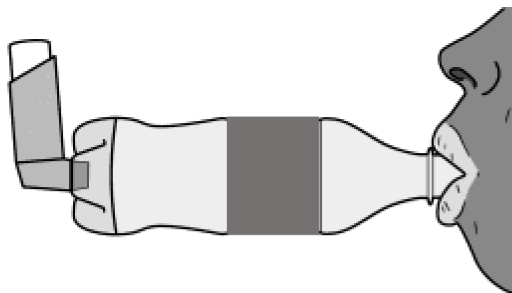
Counsel on acknowledgement that they have a chronic condition and that self-management is essential to treatment and help them gain the skills for self-management.

## A20 Advise on asthma prevention and treatment

	PREVENTION	TREATMENT
Asthma	<ul style="list-style-type: none"> <li>• Avoid cigarette smoke and trigger factors for asthma, if known</li> <li>• Avoid dusty and smoke-filled rooms</li> <li>• Reduce and then stop smoking</li> <li>• Reduce dust by using damp cloths to clean furniture, sprinkling the floor with water before sweeping, cleaning blades of fans regularly</li> <li>• It may help to eliminate cockroaches from the house (when the patient is away) and shake and expose mattresses, pillows, blankets, etc. to sunlight</li> <li>• Advise patients who are sensitive to animals not to keep in the homes</li> </ul>	<ul style="list-style-type: none"> <li>• Knows what to do if asthma deteriorates (3 ZONES- see A22)</li> <li>• Knows the difference between controller and quick-relief medications</li> <li>• Understands their treatment plan</li> <li>• Understands the benefit from using inhalers rather than tablets, and why adding a spacer is helpful</li> <li>• Is aware that inhaled steroids take several days or even weeks to be fully effective</li> </ul>

## A21 Explain how to make spacer from a plastic bottle

- Use a clean plastic litre bottle. (Clean monthly and prime with 20 puffs after each cleaning, before using for treatment.)
- Remove the inhaler cap and trace the shape of the opening of the inhaler on the base of the bottle, directly opposite the mouth of the bottle.



- Cut an opening into the base of the bottle exactly (or slightly smaller) than the size traced.
- Insert the inhaler into the spacer to check the size.
- For severe attacks or if the patient cannot cooperate, cut off the bottom and use as a mask.

## A22 Asthma Self-Management Using 3 ZONES

ZONE	PEAK EXPIRATORY FLOW (PEF)	TREAT
<p><b>RED ZONE:</b></p> <ul style="list-style-type: none"> <li>• Severe asthma attack signs:               <ul style="list-style-type: none"> <li>- Breathless at rest</li> <li>- Can only talk in single words (not phrases or sentences)</li> <li>- Confused, agitated, frightened or abnormally sleepy</li> <li>- Fast breathing</li> <li>- Breathes hunched forward or with great difficulty</li> </ul> </li> <li>• Asthma prevents walking</li> <li>• Extra medications taken for YELLOW ZONE without improvement</li> </ul>	<p>&lt;50% personal best</p>	<ul style="list-style-type: none"> <li>• Seek care <b>Urgently (day or night)</b> to receive immediate treatment for an attack</li> <li>• Refer to hospital if no response</li> </ul>
<p><b>YELLOW ZONE:</b></p> <ul style="list-style-type: none"> <li>• Frequent cough or chest tightness</li> <li>• Asthma symptoms disturb sleep or other activities</li> <li>• Asthma symptoms are worse today than yesterday</li> </ul>	<ul style="list-style-type: none"> <li>• 50-80%</li> </ul>	<ul style="list-style-type: none"> <li>• Take extra medications for worsening asthma</li> <li>• Seek care from clinic if symptoms continue to worsen despite increased treatment</li> </ul>
<p><b>GREEN ZONE:</b></p> <ul style="list-style-type: none"> <li>• No asthma attacks</li> <li>• No asthma symptoms at night</li> <li>• Able to do usual daily activities</li> </ul>	<ul style="list-style-type: none"> <li>• 80-100%</li> </ul>	<ul style="list-style-type: none"> <li>• Good control of asthma: continue with usual treatment plan</li> </ul>

**A23 Educate COPD patients on techniques and strategies to prevent disease progression.**

<p><b>PREVENT/SLOW PROGRESSION AND EXACERBATIONS</b></p>	<ul style="list-style-type: none"> <li>• Smoking and indoor air pollution are the major risk factors for COPD and must be avoided</li> <li>• Reduce and then stop smoking</li> <li>• Keep the area where meals are cooked well ventilated by opening windows and doors</li> <li>• Cook with wood or carbon outside the house if possible</li> <li>• Stop working in areas with occupational dust or high air pollution if possible</li> <li>• Understands that lung damage is progressive and irreversible but can be slowed via:             <ul style="list-style-type: none"> <li>- Good medication compliance</li> <li>- Daily exercise</li> <li>- Correct breathing techniques</li> <li>- Eating nutritious food</li> <li>- Good psychological or family support</li> </ul> </li> </ul>
<p><b>TREATMENT</b></p>	<ul style="list-style-type: none"> <li>• Knows what to do if COPD deteriorates (come back to the clinic if not well controlled by regular medication)</li> <li>• Understands the benefit from using inhalers rather than tablets, and why adding a spacer is helpful</li> <li>• Is aware that inhaled steroids take several days or even weeks to be fully effective</li> </ul>
<p><b>BREATHING TECHNIQUES</b></p>	<ul style="list-style-type: none"> <li>• Breathe out slowly: count to 3 when breathing in, and to 6 when breathing out</li> <li>• Breathe out with pursed lips</li> <li>• Use diaphragmatic breathing (teach patients how to do this)</li> </ul>
<p><b>COPING STRATEGIES</b></p>	<ul style="list-style-type: none"> <li>• Don't rush</li> <li>• Rest between tasks</li> <li>• Use temporary relaxation positions to ease breathing (sit, lean against wall, etc)</li> <li>• Organise: spread out energy demanding tasks</li> </ul>
<p><b>EXERCISE REGIME</b></p>	<ul style="list-style-type: none"> <li>• Breathlessness happens on less exertion when you are out of shape; stay active to prevent this.</li> <li>• Do daily walking (30 minutes every day)</li> <li>• Do daily arm exercises (lift and lower weighted object for 2 minutes with rhythmic breathing, rest for 2 minutes; build up to 5-6 repetitions before increasing weight)</li> </ul>
<p><b>NUTRITION</b></p>	<ul style="list-style-type: none"> <li>• Good nutrition helps prevent infection and keeps the breathing muscles strong</li> <li>• Eat small, frequent meals (avoid a full stomach that can interfere with breathing)</li> </ul>

	<ul style="list-style-type: none"> <li>• Eat energy- and nutrient- nutritious foods</li> <li>• Drink frequent glasses of water (to keep mucus thin and easy to cough up)</li> </ul>
<b>WHEN TO RETURN TO CLINIC FOR CARE</b>	<ul style="list-style-type: none"> <li>• Breathing gets worse</li> <li>• Fever</li> <li>• Increase in sputum</li> <li>• Change in colour of sputum</li> <li>• New: <ul style="list-style-type: none"> <li>- Swollen ankles</li> <li>- Confusion</li> <li>- Problems walking</li> </ul> </li> <li>• Taking more medications than planned</li> </ul>





# Appendix 1: References

Material has been drawn from:

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## Appendix 2: Essential technologies, lab, tools and medicines for chronic NCD care

Table 1: Essential tools and laboratory investigations available for chronic NCD care<sup>12</sup>- protocols 1, 2 and 3

Technologies/Laboratory investigations	Tools
Thermometer Stethoscope Blood pressure measurement device* Measurement tapes for height and waist circumference Adult weighing machine Spacers for inhalers Glucometer with supply of test strips Urine protein test strips Urine ketones test strips Pulse oximeter Peak flow meter**	WHO/ISH risk prediction charts or Uganda CVD risk charts  BMI chart  CVD risk/HTN/DM screening form  3 patient cards to support chronic care (facility-held): - NCD PATIENT CARD: DIABETES, HTN, ELEVATED CARDIOVASCULAR RISK - NCD PATIENT CARD: ASTHMA AND COPD - NCD PATIENT CARD: RHEUMATIC FEVER/RHEUMATIC HEALTH DISEASE PROPHYLAXIS AND CARE
<b>Add when resources permit</b>	
Nebulizer Blood cholesterol assay Lipid profile Serum creatinine assay Serum potassium Haemoglobin A1c Urine albumin to creatinine ratio 10-g monofilament 128-Hz tuning fork Troponin test strips Electrocardiograph (if training to read and interpret EKG available or resources to send ECGs to a cardiologist.) Point-of-care INR machine (if training to interpret INR reading available)	Longitudinal registers

\*For facilities with non-clinician health workers a validated BP measurement device with digital reading is preferable.

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

Other assumptions are that health centres will have supplies of a limited list of NCD essential medicines available on-site, as follows:

<sup>12</sup> WHO. Package of Essential Noncommunicable (PEN) Disease Interventions for Primary Health Care in Low-Resource Settings. 2010. Adapted from Table 5. Essential technologies and tools for implementing essential NCD interventions in primary care

**Table 2: Recommended essential medicines to be available for NCD chronic care at primary care level using these guidelines (for facilities with non-physician health workers, prescriptions may be required)<sup>13</sup>**

<p><b>thiazide or thiazide-like diuretic</b>- bendroflumethiazide or hydrochlorothiazide  <b>calcium channel blocker (CCB)</b>- amlodipine, nifedipine or _____  <b>beta-blocker</b> -atenolol or _____  <b>angiotensin converting enzyme inhibitor (ACE I)</b>- enalapril, captopril, rampipril or _____  <b>ARB</b>- losartan, telmisartan or _____  <b>statin</b>- atorvastatin or _____  <b>aspirin</b> 75- 100 mg  <b>insulin</b>  <b>metformin</b>  <b>sulfonylurea</b>: glimepiride, gliclazide or _____  dextrose infusion  glucose injectable solution  <b>salbutamol inhaler</b>  <b>beclomethasone inhaler</b>  <b>hydrocortisone injection</b>  <b>prednisolone</b></p> <p><b>benzathine penicillin</b>  erythromycin if confirmed PCN-allergic</p>	
<p><u>May be available at Health Centre IV:</u>  ipratropium inhaler  oxygen  isosorbide dinitrate  glyceryl trinitrate</p> <p><u>Prescribed from regional referral hospital:</u>  warfarin for those on mechanical valve replacement or in atrial fibrillation (if INR monitoring available)</p> <p><u>Within general medicines (not NCD-specific):</u>  furosemide  paracetamol  ibuprofen  penicillin  amoxicillin  sodium chloride infusion</p>	

**Table 3: Recommended clinic staff to implement chronic care**

<ul style="list-style-type: none"> <li>-Peer educators/expert patients</li> <li>-Community health workers/nutritionist (if available)</li> <li>-Nurses</li> <li>-Clinical officers (medical assistants, assistant medical officers)</li> <li>-Medical officer (if no medical officer, clinical team in chronic care will need to refer/discuss for treatment initiation and changes but may manage patients in chronic care)</li> </ul>
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<sup>13</sup> Adapted from Table 6 WHO PEN.

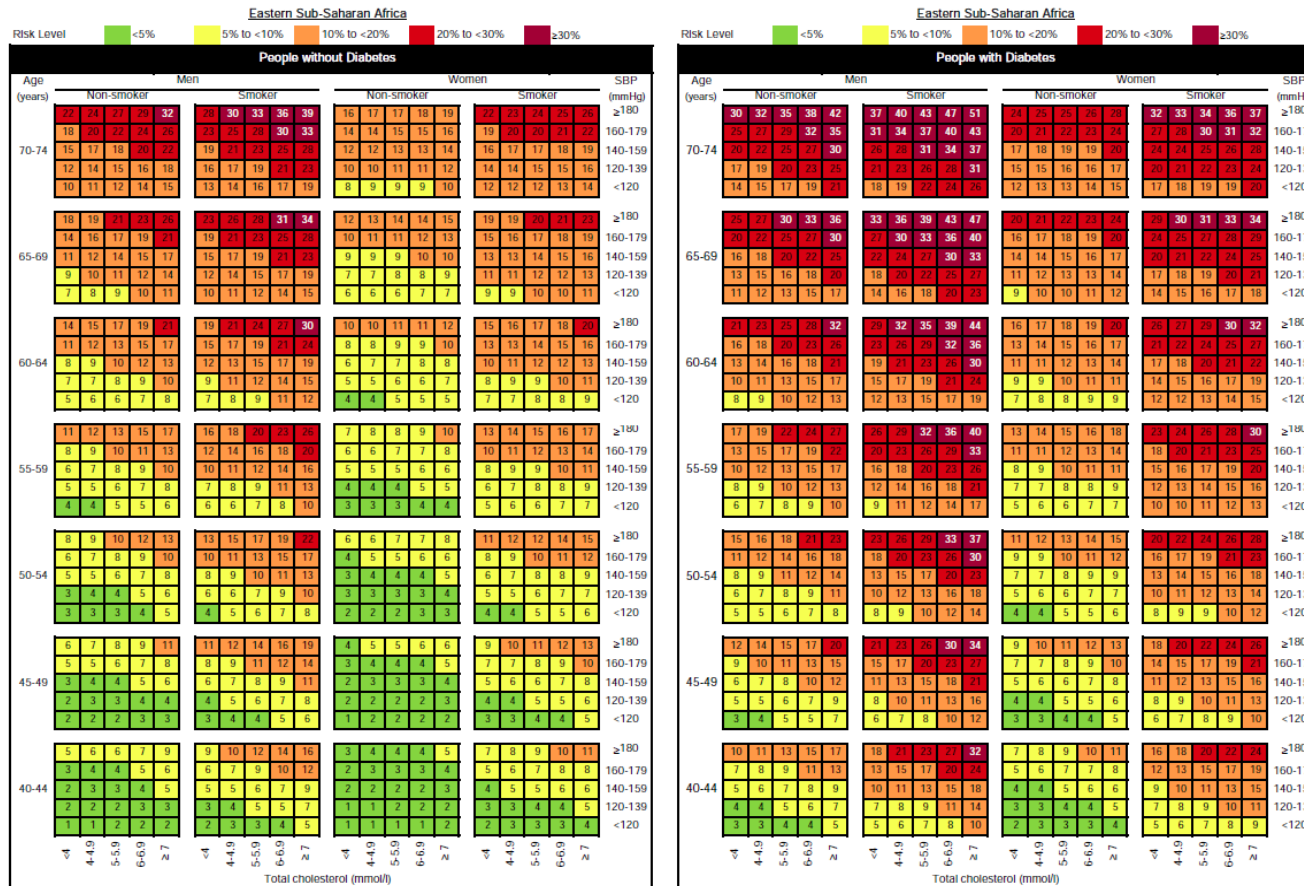
# Appendix 3: BMI Chart

WEIGHT lbs	100	105	110	115	120	125	130	135	140	145	150	155	160	165	170	175	180	185	190	195	200	205	210	215
kgs	45.5	47.7	50.0	52.3	54.5	56.8	59.1	61.4	63.6	65.9	68.2	70.5	72.7	75.0	77.3	79.5	81.8	84.1	86.4	88.6	90.9	93.2	95.5	97.7
HEIGHT in/cm	Underweight				Healthy				Overweight				Obese				Extremely obese							
5'0" - 152.4	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42
5'1" - 154.9	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	36	37	38	39	40
5'2" - 157.4	18	19	20	21	22	22	23	24	25	26	27	28	29	30	31	32	33	33	34	35	36	37	38	39
5'3" - 160.0	17	18	19	20	21	22	23	24	24	25	26	27	28	29	30	31	32	32	33	34	35	36	37	38
5'4" - 162.5	17	18	18	19	20	21	22	23	24	24	25	26	27	28	29	30	31	31	32	33	34	35	36	37
5'5" - 165.1	16	17	18	19	20	20	21	22	23	24	25	25	26	27	28	29	30	30	31	32	33	34	35	35
5'6" - 167.6	16	17	17	18	19	20	21	21	22	23	24	25	25	26	27	28	29	29	30	31	32	33	34	34
5'7" - 170.1	15	16	17	18	18	19	20	21	22	22	23	24	25	25	26	27	28	29	29	30	31	32	33	33
5'8" - 172.7	15	16	16	17	18	19	19	20	21	22	22	23	24	25	25	26	27	28	28	29	30	31	32	32
5'9" - 175.2	14	15	16	17	17	18	19	20	20	21	22	22	23	24	25	25	26	27	28	28	29	30	31	31
5'10" - 177.8	14	15	15	16	17	18	18	19	20	20	21	22	23	23	24	25	25	26	27	28	28	29	30	30
5'11" - 180.3	14	14	15	16	16	17	18	18	19	20	21	21	22	23	23	24	25	25	26	27	28	28	29	30
6'0" - 182.8	13	14	14	15	16	17	17	18	19	19	20	21	21	22	23	23	24	25	25	26	27	27	28	29
6'1" - 185.4	13	13	14	15	15	16	17	17	18	19	19	20	21	21	22	23	23	24	25	25	26	27	27	28
6'2" - 187.9	12	13	14	14	15	16	16	17	18	18	19	19	20	21	21	22	23	23	24	25	25	26	27	27
6'3" - 190.5	12	13	13	14	15	15	16	16	17	18	18	19	20	20	21	21	22	23	23	24	25	25	26	26
6'4" - 193.0	12	12	13	14	14	15	15	16	17	17	18	18	19	20	20	21	22	22	23	23	24	25	25	26



# Appendix 4: WHO CVD Risk Charts<sup>14</sup>

These cardiovascular disease risk prediction charts estimate the 10-year risk of a fatal or non-fatal cardiovascular event (e.g. myocardial infarction and stroke) by gender, age, systolic blood pressure, total blood cholesterol, smoking status, and presence or absence of diabetes mellitus by region.

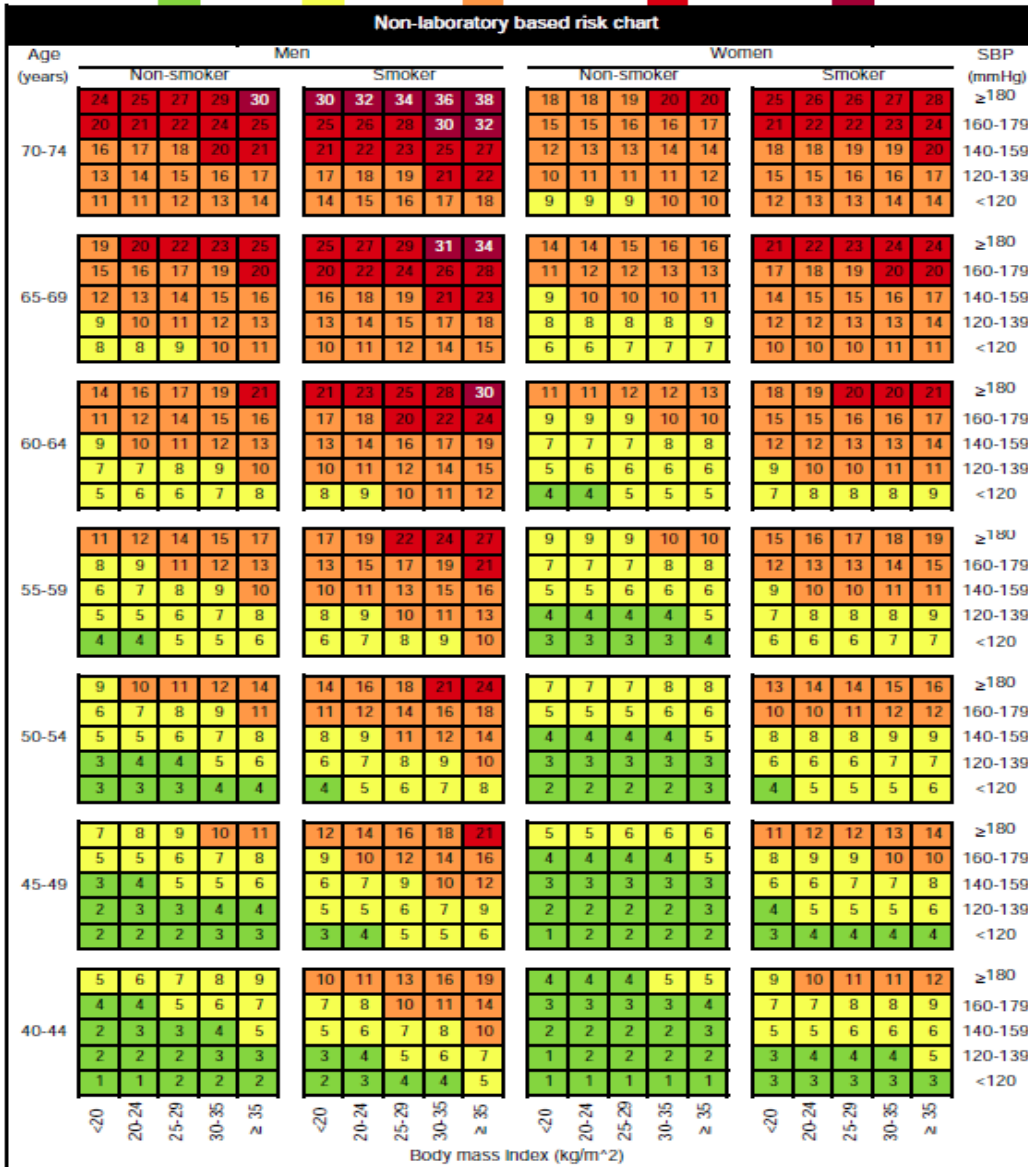


If cholesterol cannot be done, use Eastern Sub-Saharan African non-laboratory based chart.  
Note- these risk charts underestimate the risk in those with family history of premature cardiovascular disease, obesity, raised triglyceride levels, and other factors.

<sup>14</sup> Lancet Glob Health. Supplement to: The WHO CVD Risk Chart Working Group. World Health Organization cardiovascular disease risk charts: revised models to estimate risk in 21 global regions. 2019; published online Sept 2. [http://dx.doi.org/10.1016/S2214-109x\(19\)30318-3](http://dx.doi.org/10.1016/S2214-109x(19)30318-3)

Eastern Sub-Saharan Africa

Risk Level ■ <5% ■ 5% to <10% ■ 10% to <20% ■ 20% to <30% ■ ≥30%





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