WHO PACKAGE OF ESSENTIAL NONCOMMUNICABLE (PEN) DISEASE INTERVENTIONS FOR PRIMARY HEALTH CARE

World Health Organization
WHO PACKAGE OF ESSENTIAL NONCOMMUNICABLE (PEN) DISEASE INTERVENTIONS FOR PRIMARY HEALTH CARE
## CONTENTS

<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Foreword</td>
<td>iii</td>
</tr>
<tr>
<td>Acknowledgement</td>
<td>v</td>
</tr>
<tr>
<td>Abbreviations</td>
<td>v</td>
</tr>
<tr>
<td>1    Introduction</td>
<td>1</td>
</tr>
<tr>
<td>2.   Components of WHO PEN</td>
<td>5</td>
</tr>
<tr>
<td>2.1  Cardiovascular diseases</td>
<td>8</td>
</tr>
<tr>
<td>2.2  Diabetes</td>
<td>18</td>
</tr>
<tr>
<td>2.3  Chronic respiratory diseases</td>
<td>28</td>
</tr>
<tr>
<td>2.4  Cancer early diagnosis</td>
<td>40</td>
</tr>
<tr>
<td>2.5  Healthy lifestyle counselling</td>
<td>50</td>
</tr>
<tr>
<td>2.6  Self-care</td>
<td>54</td>
</tr>
<tr>
<td>2.7  Palliative care</td>
<td>58</td>
</tr>
<tr>
<td>3.   Adapting WHO PEN</td>
<td>62</td>
</tr>
<tr>
<td>4.   Annexes</td>
<td>69</td>
</tr>
<tr>
<td>Annex 4.1. Health facility assessment</td>
<td>69</td>
</tr>
<tr>
<td>Annex 4.2. Core list of medicines</td>
<td>70</td>
</tr>
<tr>
<td>Annex 4.3. Essential technologies and tools</td>
<td>71</td>
</tr>
<tr>
<td>Annex 4.4. Sample clinical record</td>
<td>72</td>
</tr>
<tr>
<td>Annex 4.5. Indicators</td>
<td>75</td>
</tr>
<tr>
<td>Annex 4.6. Additional reading</td>
<td>77</td>
</tr>
</tbody>
</table>
FOREWORD

The adoption of the Global Strategy for the Prevention and Control of Noncommunicable Diseases (NCDs) at the World Health Assembly in 2000 was an act of solidarity with the many low- and middle-income countries facing the catastrophic consequences of NCDs. It was also an acknowledgement that the long-term needs of people living with NCDs were being neglected, and was a turning point that has inspired action over the past two decades.

The risk of a 30-year-old person dying from any of the four major NCDs (cardiovascular diseases, cancers, chronic respiratory diseases, and diabetes) before the age of 70 years declined by 15% globally between 2000 and 2012. This rapid improvement was largely due to policy, legislative and regulatory measures put in place to provide more people with access to screening; early diagnosis and treatment for hypertension (such as aspirin, beta blockers, diuretics and statins); and to protect people against tobacco use (such as through tobacco-control legislation).

Despite the important progress made in the first decade of the 21st century, momentum has since dwindled, with annual reductions in age-standardized premature mortality rates slowing for the main NCDs. Between 2000 and 2016 overall NCD risk declined only 18% globally – with the risk of diabetes showing a 5% increase. In the past two decades NCDs have killed 200 million women and men aged between 30 and 70 years, the majority living in low- and middle-income countries. Most of these premature deaths could have been avoided. Unless immediate action is taken, Sustainable Development Goal (SDG) target 3.4 (reduce premature mortality from NCDs by one third) by 2030 will not be met. It is therefore more important than ever for the global community to mobilize for accelerated action to progressively cover 1 billion additional people with essential health services and medicines for the prevention and control of NCDs.
WHO has been providing guidance to advance this work. The Package of essential noncommunicable (PEN) disease interventions for primary health care in low-resource settings was first introduced in 2010 as a prioritized set of cost-effective interventions able to deliver an acceptable quality of care, even in resource-limited settings. Information on the cost-effectiveness of the interventions helped to make limited resources go further. From 2010, many additional elements were added and in 2013 a comprehensive set of tools was developed. The total cardiovascular risk assessment charts and management of type 2 diabetes were further updated in 2019.

The result today is this user-friendly WHO package of essential noncommunicable (PEN) disease interventions for primary health care resource, which brings together all these updates as protocols that are adaptable to local settings and able to empower primary care physicians, as well as allied health workers, to contribute to NCD management. WHO PEN is not meant to be exhaustive or prescriptive, but rather to be an important first step for integration of NCD management into primary health care. WHO PEN is also suitable for emergency and humanitarian settings. When implemented, it will bring more people living with or affected by NCDs into contact with the health system and promote universal health coverage.

Dr Bente Mikkelsen
Director, Department of Noncommunicable diseases
ACKNOWLEDGEMENT

The World Health Organization would like to thank all the contributors, external collaborators, reviewers and WHO staff whose dedication, support and expertise over many years have made possible this latest edition of the WHO PEN.

ABBREVIATIONS

<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>CKD</td>
<td>chronic kidney disease</td>
</tr>
<tr>
<td>COPD</td>
<td>chronic obstructive pulmonary disease</td>
</tr>
<tr>
<td>CRD</td>
<td>chronic respiratory diseases</td>
</tr>
<tr>
<td>CVD</td>
<td>cardiovascular diseases</td>
</tr>
<tr>
<td>HDL-C</td>
<td>high-density lipoprotein cholesterol</td>
</tr>
<tr>
<td>HPV</td>
<td>human papilloma virus</td>
</tr>
<tr>
<td>NCD</td>
<td>noncommunicable diseases</td>
</tr>
<tr>
<td>PHC</td>
<td>primary health care</td>
</tr>
<tr>
<td>TC</td>
<td>total cholesterol</td>
</tr>
<tr>
<td>UHC</td>
<td>universal health coverage</td>
</tr>
<tr>
<td>WHO</td>
<td>World Health Organization</td>
</tr>
</tbody>
</table>
1. INTRODUCTION

Noncommunicable diseases (NCDs), also known as chronic diseases, tend to be of long duration and are the result of a combination of genetic, physiological, environmental and behavioural factors. The main types of NCDs are cardiovascular diseases (CVDs like heart attacks and stroke), cancers, chronic respiratory diseases (such as chronic obstructive pulmonary disease – COPD and asthma) and diabetes. NCDs kill 41 million people each year, equivalent to 71% of all deaths globally.

NCD prevention and control includes population-wide interventions to reduce risk factor exposure, individual approaches to modify risk factors for high-risk individuals, and treatment of NCDs. Investing in better management of NCDs is critical. Management of NCDs includes detecting, screening and treating these diseases, and providing access to palliative care for people in need. High-impact essential NCD interventions can be delivered through a primary health care approach to strengthen early detection and timely treatment. Evidence shows such interventions are excellent economic investments because, if provided early to patients, they can reduce the need for more expensive treatment.

Countries with inadequate health insurance coverage are unlikely to provide universal access to essential NCD interventions. Yet NCD management interventions are essential for achieving the global target of a 25% relative reduction in the risk of premature mortality from NCDs by 2025, and the SDG target of a one-third reduction in premature deaths from NCDs by 2030.

An integrated approach is particularly important for low-resource settings for efficient use of limited resources. Several approaches are needed to contain the escalating costs of health care required for providing sophisticated medical services for NCDs and their complications. First, there should be more investment in prevention and primary care. Second, the cost of treating CVD, diabetes and COPD can be reduced to a minimum by carefully selecting essential evidence-based interventions. Third, the cost of treating complications of NCDs that require hospitalization (e.g. heart attacks, strokes, amputations, and blindness due to diabetic or hypertensive retinopathy, or end stage renal disease requiring dialysis) can be reduced.

WHO Package of Essential NCD interventions will help to improve the coverage of appropriate services for people with NCDs services in primary care settings.

WHO package of essential noncommunicable (PEN) disease interventions for primary health care

The Package of essential noncommunicable (PEN) disease interventions for primary health care in low-resource settings, first published in 2010, is a prioritized set of cost-effective interventions that can be delivered to an acceptable quality of care, even in resource-poor settings. The interventions were updated in 2017 as the “best buys” and other recommended interventions for the prevention and control of noncommunicable diseases. Modules of the WHO HEARTS technical package were released in 2019–2020.

This version, WHO package of essential noncommunicable (PEN) disease interventions for primary health care (WHO PEN), is developed by integrating these additional technical guidance to serve as an important first step for integration of NCD into PHC and for reforms that need to cut across the building blocks of the national health system. It provides protocols and tools for NCDs to strengthen national capacity to integrate and scale up care of NCDs in primary health care.
WHO PEN TO SUPPORT PEOPLE WITH NCDs THROUGH UNIVERSAL HEALTH COVERAGE

Universal health coverage (UHC) means that all individuals and communities receive the health services they need without suffering financial hardship. It includes the full spectrum of essential, quality health services, from health promotion to prevention, treatment, rehabilitation, and palliative care. UHC enables everyone to access the services that address the most significant causes of disease and death, and ensures that the quality of those services is good enough to improve the health of the people who receive them.

Efficient use of limited health care resources, sustainable health financing mechanisms, access to basic diagnostics and essential medicines and organized medical information and referral systems are imperative for provision of equitable care for people with and at risk of NCDs. People with NCDs require long-term care that is proactive, patient-centered, community-based and sustainable. Such care can be delivered equitably only through health systems based on primary health care. NCD services are part of the essential health services and are required in humanitarian and other crisis situations. The WHO PEN aligns with these objectives and provides a mechanism of organizing NCD service delivery with an aim of addressing UHC. The global move towards UHC offers an opportunity to explicitly prioritize NCD interventions in benefit packages for UHC.

ENABLING ACTIONS

- Explore viable health-financing mechanisms and innovative economic tools supported by evidence.
- Scale-up early detection and coverage, prioritizing cost-effective, high-impact interventions.
- Train the health workforce and strengthen the capacity of health systems, particularly at the primary care level, to address the prevention and control of noncommunicable diseases.
- Improve the availability of the affordable basic technologies and essential medicines, including generics, required to treat major noncommunicable diseases, in both public and private facilities.
- Strengthen and orient health systems to address noncommunicable diseases and risk factors through people-centred health care and universal health coverage.
- Develop and implement a palliative care policy, including access to opioid analgesics for pain relief, together with palliative care training for health workers.
- Expand the use of digital technologies to increase health service access and efficacy for NCD prevention, and to reduce the costs in health care delivery.
ROADMAP OF WHO PACKAGE OF ESSENTIAL NONCOMMUNICABLE (PEN) DISEASE INTERVENTIONS FOR PRIMARY HEALTH CARE
2. COMPONENTS OF WHO PEN

The WHO PEN defines a minimum set of interventions to address major NCDs in primary care. The interventions are for the detection, diagnosis, treatment and care of cardiovascular diseases, diabetes and chronic respiratory diseases. A section for cancer early diagnosis is also included. Components of healthy lifestyle, self care and palliative care also feature in the package. Sample templates and tools are also provided. These components are feasible even in low-resource settings, and can be delivered by primary care physicians and non-physician health workers. Contents of WHO PEN can be adapted to emergency and humanitarian settings. Countries can expand on the core interventions according to their needs and resources.
CARDIOVASCULAR DISEASES
- CVD risk assessment and management
- Hypertension management

DIABETES
- Management of diabetes

CHRONIC RESPIRATORY DISEASES
- Management of asthma and exacerbation
- Management of COPD, and exacerbation

CANCER EARLY DIAGNOSIS
- Early diagnosis
- Cervical cancer
- Breast cancer

HEALTHY LIFESTYLE COUNSELLING
- Health education
- Counseling on tobacco cessation

SELF CARE
- Self-care among patients with cardiovascular disease, diabetes or respiratory disease

PALLIATIVE CARE
- Practice points for palliative care

ADAPTING WHO PEN
CARDIOVASCULAR DISEASES

CVD RISK ASSESSMENT AND MANAGEMENT

HYPERTENSION MANAGEMENT
CARDIOVASCULAR DISEASES
Cardiovascular disease risk assessment and management

WHEN TO USE THIS PROTOCOL

- aged over 40 years
- history of tobacco use
- overweight
- known hypertension
- known diabetes mellitus (DM)
- history of premature CVD in first degree relatives
- history of DM or kidney disease in first-degree relatives

HEARTS TECHNICAL PACKAGE
http://www.who.int/cardiovascular_diseases/hearts/en/
1. Ask about

- Diagnosed heart disease, stroke, Transient Ischaemic Attack (TIA), DM, kidney disease
- Angina, breathlessness on exertion and lying flat, numbness or weakness of limbs, loss of weight, increased thirst, polyuria, puffiness of face, swelling of feet, passing blood in urine etc
- Medicines that the patient is taking
- Current tobacco use (yes/no) (answer yes if tobacco use during the last 12 months)
- Alcohol consumption (yes/no) (if “Yes”, frequency and amount)
- Occupation (sedentary or active)
- Engaged in more than 30 minutes of physical activity at least 5 days a week (yes/no)
- Family history of premature heart disease or stroke in first-degree relatives

2. Assess (physical exam)

- Measure blood pressure
- Look for pitting oedema
- Palpate apex beat for heaving and displacement
- Auscultate heart (rhythm and murmurs)
- Auscultate lungs (bilateral basal crepitations)
- Examine abdomen (tender liver)
- In DM patients examine feet; sensations, pulses, and ulcers
Calculate CVD risk using a lab-based chart

Parameters required prior to using the charts:
- age
- sex
- current smoking status
- presence or absence of diabetes*
- systolic blood pressure
- total cholesterol**
Using the WHO CVD risk (lab-based) charts

1. Select the regional chart covering your country. Countries included in each region can be found in HEARTS R MODULE.
2. Select the section of the chart as relevant for people with or without diabetes.
3. Select men or women table as appropriate.
4. Select smoker or non-smoker box.
5. Select age group.
6. Within the selected box find the cell where the individual’s systolic blood pressure (SBP) and total blood cholesterol intersect.
7. The colour of the cell indicates the 10-year risk of a fatal or non-fatal cardiovascular event. The value within the cell is the risk percentage. Colour coding is based on the grouping as indicated in the box.
8. Counsel, treat and refer according to risk level.

* Fasting plasma glucose ≥ 7.0 mmol/L (126 mg/dl), or 2-h plasma glucose ≥ 11.1 mmol/L (200 mg/dl), or HbA1c ≥ 6.5%, or known diabetes.

** Cholesterol values are to be entered in the chart as mmol/L. To convert cholesterol mg/dl to mmol/L, multiply by 0.02586. Example: TC : 200 mg/dl x 0.02586 = 5.172 mmol/L.
2.1 CARDIOVASCULAR DISEASES

**COUNSEL**
- Counsel on diet (which includes lipid-lowering diet), physical activity, smoking cessation and avoiding harmful use of alcohol

**TREAT**
- **Risk Level: > 20%**
  - Consider drug treatment if persistent BP ≥ 130/80 mmHg
  - Consider drug treatment if persistent BP ≥ 140/90 mmHg
  - Give a statin

- **Risk Level: 10–20%**

- **Risk Level: 5–10%**

- **Risk Level: < 5%**
  - Consider if persistent BP ≥ 140/90 mmHg (consistent with national policy)
FOLLOW-UP

- Follow-up every 3 months
- Follow-up every 3–6 months
- Follow up every 3 months until targets are met, then 6–9 months thereafter
- Follow up in 12 months if treatment not initiated

For additional actions for people with DM, refer to Section 2.2 Diabetes

Diagnosis and management of type 2 diabetes (HEARTS-D).
https://www.who.int/publications-detail/who-ucn-ncd-20.1

WHEN CAN TREATMENT DECISIONS BE MADE WITHOUT THE USE OF WHO CVD RISK-PREDICTION CHARTS?

Some individuals are at very high cardiovascular risk because they have already experienced a cardiovascular event or have very high levels of individual risk factors. Risk stratification is not necessary for making treatment decisions for these individuals as they belong to the high risk category; all of them need intensive lifestyle interventions and appropriate drug therapy. Risk prediction charts may tend to underestimate cardiovascular risk in such individuals, who include the following:

- patients with established angina pectoris, coronary heart disease, myocardial infarction, transient ischaemic attacks, stroke, or peripheral vascular disease, or who have had coronary revascularization or carotid endarterectomy;
- those with left ventricular hypertrophy (shown on electrocardiograph) or hypertensive retinopathy (grade III or IV);
- individuals without established CVD who have a total cholesterol ≥ 8 mmol/L (320 mg/dl) or low-density lipoprotein (LDL) cholesterol ≥ 6 mmol/L (240 mg/dl) or TC/HDL-C ratio > 8;
- individuals without established CVD who have persistent raised blood pressure (> 160–170/100–105 mmHg);
- For individuals with blood pressure above 140/90 mmHg, management may be provided as per nationally agreed protocols.
- patients with type 1 or 2 diabetes, with overt nephropathy or other significant renal disease;
- patients with known renal failure or renal impairment.
Blood pressure measurement and control is particularly important in adults who:

- have had a prior heart attack or stroke
- have diabetes
- have chronic kidney disease (CKD)
- are obese
- use tobacco
- have a family history of heart attack or stroke

Measuring blood pressure

*Measuring blood pressure is the only way to diagnose hypertension, as most people with raised blood pressure have no symptoms.*

Effective treatment algorithms for hypertension are dependent on accurate blood pressure measurement. The following advice should be followed for measuring blood pressure:

- Use the appropriate cuff size, noting the lines on the cuff to ensure that it is positioned correctly on the arm. (If the arm circumference is > 32 cm, use large cuff.)

Although at the initial evaluation it is preferable to measure blood pressure in both arms and use the arm with the higher reading thereafter, this may not be practical in a busy primary care environment.

- The patient should be sitting with back supported, legs uncrossed, empty bladder, relaxed for 5 minutes and not talking.

- For persons who are getting their blood pressure measured for the first time, it is preferable to take at least two readings and to use the second reading.
In general, hypertension is diagnosed if, on two visits on different days:

- systolic blood pressure on both days is $\geq 140$ mmHg and/or
- diastolic blood pressure on both days is $\geq 90$ mmHg

For most patients, blood pressure is considered controlled when SBP < 140 mmHg and DBP < 90 mmHg.

However, for patients with diabetes or a high risk of CVD, certain guidelines recommend lower targets: SBP < 130 mmHg and DBP < 80 mmHg.

There are four main classes of antihypertensive medications:
1. angiotensin converting enzyme (ACE) inhibitors
2. angiotensin receptor blockers (ARB)
3. calcium channel blockers (CCB)
4. thiazide and thiazide-like diuretics

Any of these four classes of antihypertensive medication may be used unless there are specific contraindications. Proper treatment of hypertension usually requires a combination of hypertension medications. Sample protocols for treatment of hypertension are available in E module of the HEARTS technical package [https://apps.who.int/iris/bitstream/handle/10665/260421/WHO-NMH-NVI-18.2-eng.pdf?sequence=1](https://apps.who.int/iris/bitstream/handle/10665/260421/WHO-NMH-NVI-18.2-eng.pdf?sequence=1)
DIABETES

Diabetes is a chronic, metabolic disease characterized by elevated levels of blood glucose (or blood sugar), which leads over time to serious damage to the heart, blood vessels, eyes, kidneys, and nerves.

TREATMENT OPTIONS

- A healthy diet to achieve or maintain normal body weight and regular physical activity are the mainstay of diabetes management. All patients should be advised on avoidance of tobacco use and harmful use of alcohol.
- Management of risk factors and referral as appropriate
- Oral hypoglycaemic agents for type 2 diabetes, if glycaemic targets are not achieved with lifestyle modification
- Metformin can be used as the first-line medicine
- Other classes of antihyperglycaemic agents, added to metformin if glycaemic targets are not met
- Statins are recommended for all people with type 2 diabetes older than 40 years, but only if this does not negatively impact access to glucose-lowering and blood pressure lowering medication.

MORE INFORMATION

HEARTS – D module on diagnosis and management of type 2 diabetes
https://www.who.int/publications-detail/who-ucn-ncd-20.1

PREVENTION OF COMPLICATIONS*

FOOT COMPLICATIONS:
- Regular (3–6 months) visual inspection and examination of patients' feet by trained personnel for the detection of risk factors for ulceration (assessment of foot sensation, palpation of foot pulses, inspection for any foot deformity, inspection of footwear).

PREVENTION OF ONSET AND PROGRESSION OF CHRONIC KIDNEY DISEASE:
- Optimal glycaemic control
- Angiotensin-converting enzyme inhibitor for persistent albuminuria

PREVENTION OF ONSET AND PROGRESSION OF DIABETIC RETINOPATHY:
- Screening for diabetic retinopathy and referral for laser treatment if indicated
- Optimal glycaemic control and blood pressure control

PREVENTION OF ONSET AND PROGRESSION OF NEUROPATHY:
- Optimal glycaemic control
Test adults who are symptomatic, or aged >40 years and who are overweight (BMI > 25), or obese (BMI > 30), or follow national guidelines.
Fasting plasma glucose (FPG) is the most practical test for low-resource settings, given its low cost. HbA1c can also be used, but is more costly.

Plasma glucose 2 hours after a 75 g oral glucose load (OGTT) can also be used to screen for and diagnose diabetes, but is less practical and more costly.

If patient is not fasting and has symptoms, a random plasma glucose (RPG) test can also be performed. It is the least accurate of the diagnostic tests. It is useful to confirm the diagnosis in person with symptoms; however, a negative test does not rule out the diagnosis of diabetes.

<table>
<thead>
<tr>
<th>TEST</th>
<th>mmol/L</th>
<th>mg/dl</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fasting plasma glucose (FPG)&lt;sup&gt;a,b&lt;/sup&gt;</td>
<td>≥ 7</td>
<td>≥ 126</td>
</tr>
<tr>
<td>Random plasma glucose (RPG)&lt;sup&gt;b&lt;/sup&gt;</td>
<td>≥ 11.1</td>
<td>≥ 200</td>
</tr>
<tr>
<td>Plasma glucose 2 hours after a 75 g oral glucose load-OGTT&lt;sup&gt;b&lt;/sup&gt;</td>
<td>≥ 11.1</td>
<td>≥ 200</td>
</tr>
<tr>
<td>Haemoglobin A1c</td>
<td>≥ 48</td>
<td>≥ 6.5%</td>
</tr>
</tbody>
</table>

<sup>a</sup> Fasting: no food and only water for 8–14 hours before the test

<sup>b</sup> Point of care devices can be used in diagnosing diabetes if laboratory services are not available.
TREATMENT GOAL

- HbA1c < 7% is generally considered to be adequate glycaemic control
- If HbA1c is not available, fasting plasma glucose (FPG < 7.0 mmol/L or < 126 mg/dl)

PHARMACOLOGICAL

- Metformin is recommended as the first-line medicine in the treatment of diabetes. Sulfonylurea (e.g. gliclazide) is recommended as the second-line treatment, and human insulin as the third-line treatment.

- Patients may require two or three medicines. Although there are other medicine classes usually used as second- and third-line treatment, including thiazolidinediones (TZDs), DPP-4 inhibitors, SGLT2 inhibitors, and GLP-1 receptor agonists, these medicines tend to be more costly than metformin, sulfonylurea and insulin, with currently limited evidence of superior effectiveness. They may, however, be considered in the rare cases when treatment with metformin, sulfonylurea, and insulin is not possible. Insulin treatment should be introduced and monitored according to national practices.

NOTE: Hypertension treatment is indicated when SBP ≥ 130 and / or DBP ≥ 80. Statins are recommended for all people with type 2 diabetes older than 40 years, but only if this does not negatively impact access to glucose-lowering and blood pressure-lowering medication.

NON-PHARMACOLOGICAL

- Patients should receive counselling and support on lifestyle change including diet, physical activity and smoking cessation at the time of diagnosis, then annually and whenever changes in treatment occur.

- Group education is effective and less costly than individual programmes

See following pages for detailed management of type 2 diabetes
MANAGEMENT OF TYPE 2 DIABETES

**FPG ≥ 7 mmol/L (126 mg/dl) and < 18 mmol/L (325 mg/dl)**
- Counsel on diet and physical activity

**OR**

**RPG ≥ 11.1 mmol/L (200 mg/dl) and < 18 mmol/L (325 mg/dl)**
- Counsel on diet and physical activity and adherence *(at all visits)*

**REASSESS IN 3 MONTHS**

**If goal not achieved**
- BEGIN MEPFORMIN
  - 500 mg 1 x daily.
  - Counsel on diet and physical activity and adherence *(at all visits)*

**REASSESS EVERY 3 MONTHS**

**If goal not achieved**
- Increase dose to 1000 mg 1 x daily

**FPG/RPG > 18 mmol/L (325 mg/dl)**
- TEST urine ketones
  - If ketones ≥ 2+
    - REFER to higher-level of care
  - If ketones < 2+
    - BEGIN gliclazide
      - 80 mg 2 x daily
      - Counsel on diet modification, physical activity and adherence to medicines

**REFER**

**REASSESS IN 3–5 DAYS**
Counsel on hypoglycaemia at all subsequent visits.

If goal not achieved:
- ADD gliclazide 80 mg 1 x daily
- Counsel on hypoglycaemia at all subsequent visits

If goal not achieved:
- Increase dose to 80 mg 2 x daily

If goal not achieved, despite adherence to medication, healthy diet and physical activity:
- REFER to higher-level health care facility for starting insulin*

Consider less stringent glycaemic control in patients with frequent severe hypoglycaemia, complications, serious comorbidities and/or limited life expectancy.

* If they are more affordable than insulin, DPP-4-inhibitors, SGLT2-inhibitors or pioglitazone can be used before insulin in cases of treatment failure with metformin and gliclazide. Introduce and titrate insulin treatment according to local practices.

** 7.0 mmol/L (126 mg/dl); 11.1 mmol/L (200 mg/dl); 18 mmol/L (325 mg/dl)
COMPLICATIONS

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 2 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 OR SIGNS
(plasma glucose < 50 mg/dl or 2.8 mmol/L)

- If conscious, give a sugar-sweetened drink
- If unconscious, give 20–50 ml of 50% glucose (dextrose) IV over 1–3 minutes

SEVERE HYPERGLYCAEMIA OR SIGNS AND SYMPTOMS
(plasma glucose > 18 mmol/L (325 mg/dl) and urine ketone 2+)

- Set up intravenous drip 0.9% NaCl 1 litre in 2 hours; continue at 1 litre every 4 hours
- REFER to hospital
When diabetes is diagnosed, monitor glycaemic control every 3 months until diabetes is controlled, then every 6 months after that.

HbA1c is the most accurate measurement of long-term glycaemic control and represents the average blood glucose over the previous two to three months. HbA1c < 7% is generally considered to be adequate glycaemic control. In people with frequent severe hypoglycaemia, severe complications and low life-expectancy, the goal for HbA1c could be relaxed, e.g. to <8%.

Fasting plasma glucose (FPG <7.0mmol/l or <126 mg/dl) can also be used to monitor control when HbA1c testing is not available.

Refer to higher level of care if goal is not achieved in 3 months, if ketones are 2+, and if there is no improvement in urine ketones after pharmacological intervention, diet and exercise modification.
2.3 CHRONIC RESPIRATORY DISEASES

MANAGEMENT OF ASTHMA, MANAGEMENT OF CHRONIC OBSTRUCTIVE PULMONARY DISEASE (COPD)
Chronic respiratory diseases (CRDs) are chronic diseases of the airways and other structures of the lung.

WHO PEN focuses particularly on bronchial asthma and chronic obstructive pulmonary disease (COPD), which are major public health problems accounting for a significant burden of morbidity and mortality in low- and middle-income countries.

IMPLEMENTATION TOOLS:
PACKAGE OF ESSENTIAL NONCOMMUNICABLE (PEN) DISEASE INTERVENTIONS FOR PRIMARY HEALTH CARE IN LOW-RESOURCE SETTINGS
https://apps.who.int/iris/bitstream/handle/10665/133525/9789241506557_eng.pdf?sequence=1
PATIENT PRESENTS WITH
cough, difficult breathing, tight chest and/or wheezing

ASSESS

- Previous diagnosis of asthma
- Symptoms since childhood or early adulthood
- History of hayfever, eczema and/or allergies
- Intermittent symptoms with asymptomatic periods in between
- Symptoms worse at night or early morning
- Symptoms triggered by respiratory infection, exercise, weather changes or stress
- Symptoms respond to salbutamol

- Previous diagnosis of COPD
- History of heavy smoking, i.e. > 20 cigarettes per day for > 15 years
- History of heavy and prolonged exposure to burning fossil fuels in an enclosed space, or high exposure to dust in an occupational setting
- Symptoms started in middle age or later (after age 40)
- Symptoms worsened slowly over a long period of time
- Long history of daily or frequent cough and sputum production starting before shortness of breath
- Symptoms that are persistent with little day-to-day variation

DIAGNOSIS OF ASTHMA LIKELY

DIAGNOSIS OF COPD LIKELY
Measure peak expiratory flow rate (PEFR)
Give two puffs of salbutamol and measure again after 15 minutes

If the PEFR improves by

20% - ASTHMA LIKELY
< 20% - COPD LIKELY
MANAGEMENT OF ASTHMA

ASSESS
Is the asthma well controlled?

Ask if the patient exhibits ALL of the following:

- exhibits daytime asthma symptoms and uses a beta agonist one or two times a week;
- exhibits night time asthma symptoms one or two times per month

- puts no or only minimal limitations on daily activities;
- has had no severe exacerbation (i.e. requiring oral steroids or admission to hospital within a month);
- a PEFR, if available, above 80% predicted.

If yes, proceed to pharmacological approach:

1. Inhaled salbutamol prn

If no, proceed to non-pharmacological approach:

Non pharmacological approach
This should be advised in all patients to help in better control of the disease.

Exposure prevention
- Smoking cessation and avoid exposure to passive smoke
- Avoid asthma triggers if known
- Avoid dusty and smoke-filled rooms
- Avoid drugs like NSAIDs and beta blockers

SYMPTOMS OF BRONCHIAL ASTHMA

- Cough
- Difficult breathing
- Chest tightness
- Wheezing

These symptoms are episodic or seasonal, vary over time and intensity and are worse during night and early morning.
At each step, check the patient’s adherence to treatment and observe their inhaler technique.

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

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

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

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

**FOLLOW UP**

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

Asthma is controlled when:
- Symptoms are present only during the day (daytime asthma)
- Use of salbutamol is limited to no more than twice a week
- Night symptoms occur fewer than twice a month
- No or minimal limitation of daily activities
- No severe exacerbations within a month
- PEFR > 80% of predicted

Referral for specialist when:
- Asthma remains poorly controlled
- The diagnosis of asthma is uncertain
- Regular oral prednisolone is required to maintain control

**Patient and family education**

**Key educational messages include:**
- The importance of physical activity and regular exercises
- Information on the reversible nature of the illness, and that asthma can be controlled but may need continuous therapy and regular follow up
- Rationale for inhaled drugs, different inhaler devices, and inhalation techniques
- Information that inhalers are not habit-forming, and are safe and better than tablets or syrup
- Patients should carry their device at each follow up visit
- The need for adherence to prescribed drugs to control the condition
- Advice regarding dealing with triggers/precipitants
MANAGEMENT OF EXACERBATION OF ASTHMA

ASSESS SEVERITY

**Severe**
- PEFR 33–50% best or predicted
- Respiratory rate more than 25 breaths/minute (adult)
- Heart rate ≥ 110 beats/minute (adult)
- Inability to complete sentences in one breath

**Very severe**
- Altered conscious level, exhaustion, arrhythmia, hypotension, cyanosis, silent chest, poor respiratory effort
- SpO₂ < 92%

**FACTORS THAT MAY TRIGGER OR WORSEN ASTHMA**
- indoor allergens (for example house dust mites in bedding, carpets and stuffed furniture, pollution and pet dander)
- outdoor allergens (such as pollens and moulds)
- tobacco smoke
- chemical irritants in the workplace
- cold air
- extreme emotional arousal such as anger or fear
- physical exercise
- certain medications, such as aspirin and other non-steroid anti-inflammatory drugs, and beta-blockers

**First-line treatment**

Prednisolone 30–40 mg for five days for adults and 1 mg per kg for three days for children, or longer, if necessary, until they have recovered
Regarding treatment, ensure that the patient or parent:

- Knows what to do if the asthma gets worse
- Understands the benefit of using inhalers rather than tablets, and why adding a spacer is helpful
- Is aware that inhaled steroids take several days or even weeks to be fully effective

**COUNSEL**

Regarding prevention:

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

**COUNSEL**

**Second-line treatment**

Increase frequency of dosing via an metered dose inhaler and spacer or by nebulizer, or give salbutamol by continuous nebulization at 5–10 mg per hour, if appropriate nebulizer available

For children, nebulized ipratropium, if available, can be added to nebulized salbutamol

**RECOMMENDATION**

Salbutamol in high doses by metered dose inhaler and spacer (e.g. four puffs every 20 minutes for 1 hour) or by nebulizer

Oxygen, if available, and if oxygen saturation levels are low (below 90%)

**IF NOT RESPONDING**

Reassess at intervals depending on severity

2

3
MANAGEMENT OF COPD

SYMPTOMS SUGGESTIVE OF COPD
- Breathlessness (or a "need for air")
- Chronic cough
- Sputum (mucous) production

* Depending on the local risk of infection with Tuberculosis, pulmonary TB should always be suspected if cough lasts more than 2 weeks.

ASSESS SEVERITY
Measure PEFR and oxygen saturation, if possible

MODERATE
- If breathless with normal activity

SEVERE
- If breathless at rest

TREAT
1. Inhaled salbutamol, two puffs as required, up to four times daily

EXACERBATION OF COPD
- Antibiotics should be given for all exacerbations with evidence of infection
Advice to patients and families

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

For severe exacerbations, give oral prednisolone 30–40 mg for around seven days

Give high doses of inhaled salbutamol by nebulizer or metered dose inhaler with spacer (e.g. four puffs every 20 minutes for 1 hour) or by nebulizer

Oxygen, if available, should be given through a mask that limits the concentration to 24% or 28%

If symptoms are still troublesome, consider low-dose oral theophylline

If ipratropium inhalers are available, they can be used instead of or added to salbutamol, but they are more expensive
2.4 CANCER EARLY DIAGNOSIS

EARLY DIAGNOSIS
CERVICAL CANCER
BREAST CANCER
CANCER

EARLY DIAGNOSIS

- Identify presenting features of cancer and refer to next level for confirmation of diagnosis
- Guide to cancer early diagnosis
  

CERVICAL CANCER

Cervical cancer is the fourth most frequent cancer among women. Primary prevention through vaccination against HPV, effective screening and early diagnosis, and timely, quality treatment of invasive cancers can reduce incidence and mortality rates.

- Comprehensive cervical cancer control: A guide to essential practice
  

BREAST CANCER

Breast cancer is the most frequent cancer among women. There are two early detection strategies for breast cancer: early diagnosis and screening.

- Mammography position paper
  
ASSESS FOR common cancer signs and symptoms

Cancer symptoms can be non-specific, yet it is important that any “red flag” symptoms are recognized by providers and investigated further.

<table>
<thead>
<tr>
<th>SITE OF CANCER</th>
<th>COMMON SYMPTOMS*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Breast</td>
<td>Lump in the breast, asymmetry, skin retraction, recent nipple retraction, blood stained nipple discharge, eczematous changes in areola</td>
</tr>
<tr>
<td>Cervix</td>
<td>Post-coital bleeding, excessive vaginal discharge</td>
</tr>
<tr>
<td>Colon, rectum</td>
<td>Change in bowel habits, unexplained weight loss, anaemia, blood in the stool (rectal cancer)</td>
</tr>
<tr>
<td>Oral cavity</td>
<td>White lesions (leukoplakia) or red lesions (erythroplakia), growth or ulceration in mouth</td>
</tr>
<tr>
<td>Naso-pharynx</td>
<td>Nosebleed, permanent bocked nose, deafness, nodes in upper part of the neck</td>
</tr>
<tr>
<td>Larynx</td>
<td>Persistent hoarseness of voice</td>
</tr>
<tr>
<td>Stomach</td>
<td>Upper abdominal pain, recent onset of indigestion, weight loss</td>
</tr>
<tr>
<td>Skin</td>
<td>Brown lesion that is growing with irregular borders or areas of patchy colouration that may itch or bleed</td>
</tr>
<tr>
<td>Other skin cancers</td>
<td>Lesion or sore on skin that does not heal</td>
</tr>
<tr>
<td>Urinary bladder</td>
<td>Pain, frequent and uneasy urination, blood in urine</td>
</tr>
<tr>
<td>Prostate</td>
<td>Difficulty (long time) in urination, frequent nocturnal urination</td>
</tr>
<tr>
<td>Retinoblastoma</td>
<td>White spot in the pupil, convergent strabismus (in a child)</td>
</tr>
<tr>
<td>Testis</td>
<td>Swelling of one testicle (asymmetry)</td>
</tr>
</tbody>
</table>

* Common symptoms and signs that may be due to cancer. These common symptoms may be due to cancer or due to a different medical condition. People with these symptoms should seek medical attention without delay.
Treatment for cancer is provided at tertiary and sometimes secondary health care facilities, where appropriate infrastructure is available. At the primary care level treatment is limited to treatment for precancerous lesions of the cervix. This can include cryotherapy, thermal coagulation and/or loop electrosurgical excision procedure (LEEP), according to the local context and national protocols.

Primary care providers should explain to patients that symptoms may be related to cancer and that timely referral is necessary. When discussing cancer management plans, efforts should be made to include the patient’s social support system and a second consultation may be required. Clear steps to the next level of care should be provided to minimize loss to follow-up. To further reduce this risk, staff could contact patients with cancer at predesignated intervals or consider a patient navigation programme. Finally, primary care providers should also counsel patients on risk reduction such as behavioural modification (e.g. smoking cessation).
Follow-up services at the primary care level must be coordinated with providers who diagnose and treat cancer.

- Information transfer between providers (e.g. pathology unit and primary care provider) is necessary to inform decision-making in cancer management.

- A direct link between primary care facilities and higher levels of care improves timely access and patient adherence to care.
CERVICAL CANCER

ASSESS LIKELIHOOD

Where women present with any of the following:

- Abnormal vaginal bleeding (i.e. after coitus, between menstrual periods, post menopause)
- Foul-smelling discharge
- Pain during vaginal intercourse

- Assess signs and symptoms (i.e. history, intensity, duration, progression)
- Identify relevant risk factors: age (aged 30 years or above)
- Speculum examination

- Differential diagnosis: abortion in pre-menopausal women, infections (e.g. chlamydia, gonorrhoea), genital ulcers, cervical inflammation, uterine polyps, dysfunctional uterus hemorrhage, endometrial or vaginal cancer
Follow obstetric and gynaecological guidelines as appropriate.

If condition is not manageable at PHC, or persists or worsens.

**NOTE:** Detailed information regarding cervical cancer assessment, diagnosis, treatment and follow-up is provided in the WHO Comprehensive cervical cancer control: A guide to essential practice (C4GEP).


Referral of women with the above symptoms may lead to a diagnosis of "early invasive cervical cancer", particularly in women aged 30 years or above.
**BREAST CANCER**

**ASSESS LIKELIHOOD**

Where women present with **any** of the following:

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

- Assess signs and symptoms (i.e. history, intensity, duration, progression)
- Identify relevant breast cancer risk factors (such as age, family history, previous history of breast cancer, chest irradiation)
- Clinical examination of both breasts, axillae and neck
- Differential diagnosis: benign breast diseases (e.g. adenoma, adenosis, mastitis, abscess, etc.)
Referral of women with small breast lumps may lead to diagnosis of “early breast cancer”

For more information:
Guide to Cancer Early Diagnosis
HEALTHY LIFESTYLE COUNSELLING

HEALTH EDUCATION
COUNSELLING ON CESSATION OF TOBACCO USE
Counselling for healthy lifestyles involves guiding and supporting patients in making changes in certain behaviours to reduce the risk of NCDs.

**HEALTHY LIFESTYLE COUNSELLING**

- **TECHNICAL PACKAGE FOR CARDIOVASCULAR DISEASE MANAGEMENT IN PRIMARY HEALTH CARE: HEALTHY-LIFESTYLE COUNSELLING.**
  

- **A GUIDE FOR TOBACCO USERS TO QUIT**
  
  https://apps.who.int/iris/bitstream/handle/10665/112833/9789241506939_eng.pdf?sequence=1
**EDUCATE YOUR PATIENT TO:**

- Be physically active
- Eat a “heart healthy” diet
- Stop tobacco and avoid harmful use of alcohol
- Adhere to treatment

---

**BE PHYSICALLY ACTIVE**

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

---

**EAT A HEART HEALTHY DIET**

- Salt (sodium chloride)
  - Restrict to less than 5 grams (1 teaspoon) per day
  - Reduce salt when cooking, limit processed and fast foods
- Fruits and vegetables
  - 5 servings (400–500 g) of fruits and vegetable per day
  - 1 serving is equivalent to 1 orange, apple, mango, banana or 3 tablespoons of cooked vegetables
- Fatty food
  - Limit fatty meat, dairy fat and cooking oil (less than two tablespoons per day)
  - Replace palm and coconut oil with olive, soya, corn, rapeseed or safflower oil
  - Replace other meat with chicken (without skin)
- Fish
  - Eat fish at least 3 times per week, preferably oily fish such as tuna, mackerel, salmon

---

**STOP TOBACCO AND AVOID HARMFUL USE OF ALCOHOL**

- Encourage all non-smokers not to start smoking
- Strongly advise all smokers to stop smoking and support them in their efforts
- Individuals who use other forms of tobacco should be advised to quit
- Alcohol abstinence should be reinforced.
- 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
  - medical conditions made worse by alcohol
  - difficulties in controlling drinking

---

**ADHERE TO TREATMENT**

- If the patient is prescribed medication:
  - teach the patient how to take it at home
  - explain the difference between medicines for long-term control (e.g. blood pressure) and medicines for quick relief (e.g. for wheezing)
  - tell the patient the reason for prescribing the medication
- Show the patient the appropriate dose
- Explain how many times a day to take the medication
- Label and package the tablets
- Check the patient’s understanding before the patient leaves the health centre
- Explain the importance of:
  - keeping an adequate supply of the medication
  - the need to take the medication regularly as advised even if there are no symptoms
COUNSELLING ON CESSATION OF TOBACCO USE (5 As)

1. ASK
- Do you use tobacco?
  - NO: Advise not to start tobacco use and to avoid secondhand exposure

2. ADVISE
- YES:
  - Advise to quit in a clear, strong and personalized manner
    "Tobacco use increases the risk of developing a heart attack, stroke, lung cancer and respiratory diseases. Quitting tobacco use is the one most important thing you can do to protect your heart and health, you have to quit now."

3. ASSESS
- YES:
  - Are you willing to make a quit attempt now?
    - NO:
      - Promote motivation to quit
        Provide information on health hazards of tobacco and give leaflet to the patient

4. ASSIST
- Assist in preparing a quitting plan
  - Set quit date
  - Inform family and friends
  - Ask for their support
- Remove cigarettes/tobacco
- Remove objects/articles that prompt you to smoke
- Arrange follow up visit*

5. ARRANGE
- At follow-up visit
  - Congratulate success and reinforce
  - If patient has relapsed, consider more intensive follow-up and support from family

* Ideally a 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.
2.6

SELF-CARE

SELF-CARE AMONG PATIENTS WITH CARDIOVASCULAR DISEASE, DIABETES OR RESPIRATORY DISEASES
All patients with NCDs can perform some level of self-care.
SELF-CARE
AMONG PATIENTS WITH CARDIOVASCULAR DISEASE, DIABETES OR RESPIRATORY DISEASE

- All patients with NCDs perform some level of self-care. Health workers can work to strengthen self-care strategies among these patients by following this protocol.
- Conselling patients on self-care can be integrated into existing care structures.
- All interactions with patients can be seen as opportunities to understand and improve patients' self-care strategies.
- Strategies to improve adherence should form part of self-care for NCDs.
- Promoting self-care among patients with NCDs should take into account patients' beliefs and concerns about medicines and their effects on adherence.
- No single strategy to improve overall adherence is recommended over another. Health workers should use their skills, resources, and patient preferences to devise plans to improve adherence.
- Group education programmes, rather than individual education, may offer a cost-effective strategy to deliver education in low- and middle-income countries.

FIRST VISIT
- Identify opportunities to improve self-care.
- Provide written or visual educational materials and training in self-care.
- For self-care recommendations that require an action plan, agree on and provide a written or visual action plan.

FOLLOWING VISITS
- Check the patient's progress.
- If necessary and the patient wishes it, repeat the steps from the first visit.
## Condition-Specific Recommendations on Self-Care

### Cardiovascular Diseases
- **Raised blood pressure**
  - Self-measurement to monitor blood pressure is recommended for the management of hypertension in appropriate patients where the affordability of the technology has been established.

- **Heart failure**
  - Appropriate patients could benefit from being educated on the benefits of cardiac rehabilitation, and can be encouraged to undertake rehabilitation exercise in the home setting.

- **Need for anticoagulation**
  - Self-monitoring of blood coagulation and self-adjustment of dosage in patients receiving oral anticoagulation agents is recommended if affordable and according to an agreed action plan with a health professional.

### Diabetes
- **Diabetes Type 1 and 2**
  - People with type 1 and type 2 diabetes on insulin should be offered self-monitoring of blood glucose based on individual clinical need.

- **Diabetes Type 1**
  - Self-monitoring and self-adjustment of dosage is recommended in type 1 diabetes according to an agreed action plan with a health professional.

### Respiratory Diseases
- **Asthma and chronic obstructive pulmonary disease**
  - Self-monitoring in asthma and COPD and self-adjustment of dosage is recommended according to an agreed action plan with a health professional.

- **Chronic obstructive pulmonary disease**
  - Appropriate patients may benefit from being educated on the benefits of chronic obstructive pulmonary disease rehabilitation, and encouraged to undertake rehabilitation exercise.
2.7 PALLIATIVE CARE

PRACTICE POINTS FOR PALLIATIVE CARE
PALLIATIVE CARE

WHAT IS PALLIATIVE CARE

Palliative care is an approach that improves the quality of life of patients and their families facing the problem associated with life-threatening illness, through the prevention and relief of suffering by means of early identification and impeccable assessment and treatment of pain and other problems, physical, psychosocial and spiritual.

WHO Definition of Palliative Care
https://www.who.int/cancer/palliative/definition/en/

ESTABLISHING PALLIATIVE CARE

Palliative care services can be established or expanded in a number of ways, depending on the local situation. For instance, a country may decide to begin by:

– Setting up a palliative home-care service or integrating palliative home care into existing homecare services

– Setting up a community-based palliative care service

– Setting up a hospital-based palliative care service
# PRACTICE POINTS FOR PALLIATIVE CARE

## TREAT AND REFER WHEN NECESSARY FOR:

### PHYSICAL CARE NEEDS
- Pain (all types)
- Respiratory problems (dyspnoea, cough)
- Gastrointestinal problems (constipation, nausea, vomiting, dry mouth, mucositis, diarrhoea)
- Delirium
- Wounds, ulcers, skin rash and skin lesions
- Insomnia
- Pain (all types)
- Respiratory problems (dyspnoea, cough)
- Gastrointestinal problems (constipation, nausea, vomiting, dry mouth, mucositis, diarrhoea)
- Delirium
- Wounds, ulcers, skin rash and skin lesions
- Insomnia

### PSYCHOLOGICAL, EMOTIONAL, AND SPIRITUAL CARE NEEDS
- Psychological distress
- Anxiety
- Suffering of family or caregivers
- Spiritual needs and existential distress
- Depression
- Bereavement support for family/caregivers

### CONSIDER AND MANAGE

#### CARE PLANNING AND COORDINATION
- Identify support and resources available; develop and implement care plan based on patient’s needs
- Provide care in the last weeks/days of life
- Facilitate the availability and access to medications (especially opioids)
- Identify the psychosocial/spiritual needs of professionals providing care (including self-care)

#### COMMUNICATION ISSUES
- Communicate with patient, family and caregivers about diagnosis, prognosis, treatment, symptoms and their management, and issues relating to care in the last days/weeks of life
- Identify and set priorities with patient and family/caregivers
- Provide information and guidance to patients and caregivers according to available resources

---

Integrating palliative care and symptom relief into primary health care: a WHO guide for planners, implementers and managers
https://apps.who.int/iris/bitstream/handle/10665/274559/9789241514477-eng.pdf?sequence=1&isAllowed=y
ADAPTING WHO PEN
3. ADAPTING WHO PEN

A stepwise approach to implementation of WHO PEN is presented below. The key advantage of a stepwise approach, whether to prevention, surveillance or management, is that it offers a framework to help countries get started and to focus on what is practical, taking into account the available human, financial and other resources.

1. ENGAGE STAKEHOLDERS
   - Hold introductory meetings with stakeholders
   - Obtain ministry of health endorsement
   - Establish technical working group
   - Identify demonstration site

2. ASSESS CURRENT STATUS OF NCDs
   - Desktop review of existing plans, policies (including public policies) and guidelines that contribute to NCD control in the country
   - Assess the capabilities of the primary care health infrastructure
   - Review and summarize existing NCD services at all levels of the health system
   - Conduct a strengths, weaknesses, opportunities, threats (SWOT) analysis

3. DEVELOP A SERVICE DELIVERY MODEL FOR PHC
   - Develop a package of service delivery for NCDs based on WHO PEN
REVIEW AND PLAN FOR SCALE UP

- Review and evaluate WHO PEN implementation at demonstration sites
- Cost WHO PEN package implementation
- Finalise service delivery model
- Develop a plan for phased scale up

CAPACITY BUILDING

- Conduct training for healthworkers on agreed upon model and protocols
- Host ongoing inservice trainings
- Appoint mentors
- Develop supervision checklists and ensure supportive supervision is done at regular intervals

MONITORING AND EVALUATION

- Define indicators and existing tools for measurement
- Establish a monitoring process
ENGAGE STAKEHOLDERS

1. Identify key stakeholders invested in the current NCD health service delivery system to invite to the consultation. This is to build consensus and garner broad-based support.

   - National-level: Ministry of Health, Ministry of Finance, Ministry of Social Welfare, political leaders at state or division-levels
   - Local/Community-level: Local political leaders, community leaders, public sector health providers, private sector health providers
   - Other sectors: NCD specialists, media, research groups or academic institutions, civic groups or health-oriented nongovernmental organizations (NGOs)

2. Obtain an agreement to adapt WHO PEN and strengthen NCD management in primary care

   - Establish technical working group
     - Composition: Public health and clinical staff members (including medical, nursing and pharmaceutical)
     - Role: To provide overall direction, leadership and supervision to the local adaptation of the WHO PEN and to national rollout; advise on the number of additional personnel needed, the required competencies, skills and their roles and responsibilities; and provide specific technical advice or support for the adaptation or development of the protocols

   - Identify demonstration site
     - The recommended criteria for selection of site:
       - Geographic access and communication
       - Health centres with a referral care facility
       - Agreement from local government
       - Support from professional associations and civil society groups
     - List all primary health care centres
     - Select a sample of facilities – usually 10% of the total number of facilities in the selected site
     - Establish an agreement with demonstration site (e.g. provincial agreement or district agreement) and include operational structure

   - Conduct facility assessment
     - First create a map of the sample of health facilities at demonstration site and the referral linkages
     - Conduct a facility assessment (Annex 4.1)
     - Analyse the information collected and identify gaps in training, equipment, drugs, record keeping, and management practices
     - Determine minimum requirements of skilled staff, equipment, devices and medicines needed for implementing the package
2. ASSESS CURRENT STATUS OF NCD

- Desktop review of all related strategies, policies (including public policy measures on tobacco, alcohol, diet and physical activity) and guidelines relating to NCDs in primary health care
- Using the template to the right determine the current PHC infrastructure
- Map the current patient pathway for NCD service delivery
- Conduct a SWOT analysis of the country’s NCD service delivery system using the template below

<table>
<thead>
<tr>
<th>STRENGTHS</th>
<th>WEAKNESSES</th>
<th>OPPORTUNITIES</th>
<th>THREATS</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>1.</td>
<td>1.</td>
<td>1.</td>
</tr>
<tr>
<td>2.</td>
<td>2.</td>
<td>2.</td>
<td>2.</td>
</tr>
<tr>
<td>3.</td>
<td>3.</td>
<td>3.</td>
<td>3.</td>
</tr>
</tbody>
</table>

SWOT

GOVERNANCE AND LEADERSHIP
- Is NCD risk management in primary health care included in the: national/district health strategy; national NCD strategy; national operational plans: basic package of services?
- Is management of CVD/Hypertension/diabetes/CRD/cancer included in national clinical guidelines for primary health care?
- Do national clinical guidelines for primary health care include evidence-based protocols for risk-based CVD management?
- Are there standardized systems/tools for mentoring and supervision of primary health-care staff?
- What is the frequency of district management meetings? Who attends?

HEALTH FINANCING
- Is there a specific NCD budget within health financing? If yes, what is it?
- In those systems with health insurance, are NCD services and medicines included in benefit packages?

ACCESS TO ESSENTIAL MEDICINES AND TECHNOLOGIES
- Are the minimum essential medicines (Annex 4.2) for NCDs included in the national essential medicines list and the minimum primary health care medicines list?
- Are the essential NCD technologies and tools (Annex 4.3) included in minimum standards for primary health care facilities?
- Describe the national medicines supply management system (selection, quantification, procurement, storage, distribution).

HEALTH WORKFORCE
- Are there dedicated management staff for NCD management at national and district levels?
- Which staff cadres have authority to prescribe and/or authorize medication refills?
- Have task-sharing approaches in primary health care been adopted or considered?
- Do in-service training packages exist for management of CVD, hypertension or diabetes in primary health care?
- Has any in-service training on NCD risk management occurred in last 2 years? If yes, who delivered it?

HEALTH INFORMATION SYSTEMS
- Are there mechanisms for data feedback from national, to subnational, to facility level?
- Are there dedicated staff to collect data at district level?
- Describe the district-level database for routine health management information system and other facility data.
- Are NCD management indicators included in a national minimum indicator set?
- Describe the type of individual patient record format used in public primary health-care facilities.
- An sample clinical record is given (Annex 4.4)

ORGANIZATION OF SERVICE DELIVERY
- Describe the facility levels within the public health system.
- Describe NCD management services available at each level of care including a healthy lifestyle counselling component.
- Are catchment populations defined for primary health care?
- What is the current service delivery model(s) in public primary health-care facilities? For example, general outpatient services where patients see any available provider; disease specific clinics. Are there established national and/or district-level quality improvement systems for primary health care?
3 DEVELOP A SERVICE DELIVERY PACKAGE FOR PHC

- Develop a service delivery package relevant to the local context by adapting WHO PEN.
  
  - Elements to consider when developing a service delivery package:
    - Health facility should be equipped to provide basic promotive, preventive and some curative services along with referrals and follow up
    - A matrix can be developed to map the various units of service and details under each unit as services, infrastructure, equipment and personnel
    - Once each unit matrix is ready then the final matrix can be developed by matching the matrices for common items
  
  - Consider urban vs rural service delivery models
  
  - Decide on appropriate WHO PEN protocols for implementation
  
  - Decide which protocol to implement based on community and health systems capacity assessments, and consideration of health priorities and the availability of human and technical resources. Adapt management protocols as required to reflect country context, availability of drugs etc

4 CAPACITY BUILDING

- As per service model, conduct appropriate training to primary care workers to deliver integrated NCD care – to assess, diagnose, manage and refer patients appropriately. Primary care workers should be able to:
  
  - Apply relevant WHO PEN protocols and tools and interpret the results
  
  - Understand referral thresholds
  
  - Be familiar with the system and information to record and track to monitor WHO PEN implementation
  
  - Deliver preventive health interventions and empower patients
  
  - Plan for improving patient adherence to follow-up visits
  
  - Consider incorporating the WHO PEN training into medical, nursing and allied health course curriculum, and providing continuing education courses for primary care health workers

5 MONITORING AND EVALUATION

- Health facilities should have a system for collection of data. Sample clinical record is provided in Annexe 4.4. Data collation and analysis may be done at appropriate levels. Indicators for hypertension and diabetes are provided in Annex 4.5. They can serve as tracers for assessing the services.

- Establish monitoring process:
  
  - Second-level facility (e.g. national, provincial or district health office) to conduct visits to first-level health facilities at least once every three months
  
  - Conduct periodic audits of facilities providing the services
6 REVIEW AND PLAN FOR SCALE UP

Review and evaluate demonstration phase
- Conduct an external assessment and audit of clinical practice.
- Analyse the findings to assess the model and make necessary refinements.

Finalize service delivery model and requirements
- Agree on the service delivery model based on the feasibility and sustainability.
- Finalize the national protocols, referral criteria, and the equipment, drugs and consumables required.
- Agree on the human resources needed, their roles and responsibilities, and the training curriculum.
- Finalize the requirements of the health information system and clinical recording system.
- Agree on the monitoring and evaluation system, and the tools for auditing.

Develop a multi-year plan to expand services nationwide
- Estimate the cost for the national expansion plan. Utilize cost information from the demonstration phase and from the costing study.
- Have a plan to ensure most cost-effective procurement and distribution of drugs and consumables. E.g. include core NCD drugs and technologies in the essential drug list; ensure transparency in the tender process; purchase cheaper quality generics and consider removing taxes and duties on essential drugs and technologies.
- Strengthen demand forecasting and supply chain mechanisms; strengthen health information system and analyse ordering cycle at the health centre.
- Obtain administrative order to expand services nationwide. Detail service model, roles and responsibilities, national protocols, and plan of action.
- Secure allocation in national health budget.
- Mobilize development partners, private sector, academia and the community to contribute to strengthening NCD management in primary health care.
- Conduct periodic monitoring and regular evaluation. Repeat annually for short-term indicators (e.g. impact indicators) and every 3–5 years for medium-term progress indicators (e.g. outcome indicators).
<table>
<thead>
<tr>
<th>Domain</th>
<th>Observation Points</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Patient care services</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Is there a separate NCD clinic?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>NCD treatment guidelines available?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>How are NCDs covered?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>How are NCDs managed?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Where is BP taken?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Flow of patients in the facility?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>NCD treatment guidelines available?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>How are NCDs covered?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>How are NCDs managed?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Which works (what are the strengths)?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>What doesn’t work (what are the challenges)?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>What should be done next (how can NCD services be improved)?</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

ANNEX 4.1: HEALTH FACILITY ASSESSMENT

SUMMARY OF HEALTH FACILITY ASSESSMENT

<table>
<thead>
<tr>
<th>Domain</th>
<th>Observation Points</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Patient care services</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Is there a separate NCD clinic?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>NCD treatment guidelines available?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>How are NCDs covered?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>How are NCDs managed?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Where is BP taken?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Flow of patients in the facility?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>NCD treatment guidelines available?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>How are NCDs covered?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>How are NCDs managed?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Which works (what are the strengths)?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>What doesn’t work (what are the challenges)?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>What should be done next (how can NCD services be improved)?</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
ANNEX 4.2: CORE LIST OF MEDICINES

(for primary care facilities with physicians at a higher level of care)

• Amoxicillin
• Angiotensin inhibitor (enalapril)
• Aspirin
• Beclomethasone
• Beta-blocker (atenolol)
• Calcium channel blocker (amlodipine)
• Codeine
• Dextrose infusion
• Diazepam
• Epinephrine
• Erythromycin
• Furosemide
• Glutathione
• Glyceryl trinitrate
• Heparin
• Heparin sodium
• Ibuprofen
• Insulin
• Isosorbide dinitrate
• Metformin
• Morphine
• Magnesium sulphate
• Prednisolone
• Promethazine
• Senna
• Sodium chloride infusion
• Spironolactone
• Statin (simvastatin)
• Succinylcholine
• Thiazide diuretic
• Theophylline
• Thyroid hormone
• Thymus (sircolmazin)
• Tolbutamide
• Tocopherol
• Tranexamic acid
• Urinary anticholinergic
• Vancomycin
• Vasopressin
• Warfarin

(for PC facilities with only non-physician health workers most of the medicines below are required for refill of prescriptions issued by physicians at a higher level of care)

• Amoxicillin
• Angiotensin inhibitor (enalapril)
• Aspirin
• Beclomethasone
• Beta-blocker (atenolol)
• Calcium channel blocker (amlodipine)
• Codeine
• Dextrose infusion
• Diazepam
• Epinephrine
• Erythromycin
• Furosemide
• Glutathione
• Glyceryl trinitrate
• Heparin
• Heparin sodium
• Ibuprofen
• Insulin
• Isosorbide dinitrate
• Metformin
• Morphine
• Magnesium sulphate
• Prednisolone
• Promethazine
• Senna
• Sodium chloride infusion
• Spironolactone
• Statin (simvastatin)
• Succinylcholine
• Thiazide diuretic
• Theophylline
• Thyroid hormone
• Thymus (sircolmazin)
• Tolbutamide
• Tocopherol
• Tranexamic acid
• Urinary anticholinergic
• Vancomycin
• Vasopressin
• Warfarin
# Essential Technologies and Tools

<table>
<thead>
<tr>
<th>TECHNOLOGIES</th>
<th>TOOLS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Technologer Multiplicatum</td>
<td>Defibrillator</td>
</tr>
<tr>
<td>Evidence-based clinical protocols</td>
<td>Tuning fork</td>
</tr>
<tr>
<td>WHO CVD risk prediction charts</td>
<td>Urine creatinine assay</td>
</tr>
<tr>
<td>Clinical protocols</td>
<td>Troponin test strips</td>
</tr>
<tr>
<td>Flow charts with referral criteria</td>
<td>Lipid profile</td>
</tr>
<tr>
<td>Patient clinical record</td>
<td>Blood cholesterol assay</td>
</tr>
<tr>
<td>Medical information register</td>
<td>Pulse oximeter</td>
</tr>
<tr>
<td>Audit tools</td>
<td>Nebulizer</td>
</tr>
<tr>
<td>Audible (available)</td>
<td>Add when resources permit:</td>
</tr>
<tr>
<td>Thermometer</td>
<td>Line Ketones Test strips</td>
</tr>
<tr>
<td>Stethoscope</td>
<td>Line Protein Test strips</td>
</tr>
<tr>
<td>Blood pressure measurement device</td>
<td>Urine Protein Test strips</td>
</tr>
<tr>
<td>Blood pressure measurement device</td>
<td>Serum creatinine assay</td>
</tr>
<tr>
<td>Measurement tape</td>
<td>Urine microalbuminuria test strips</td>
</tr>
<tr>
<td>Peak flow meter**</td>
<td>Troponin test strips</td>
</tr>
<tr>
<td>Weighing machine</td>
<td>Lipid profile</td>
</tr>
<tr>
<td>Measurement tape</td>
<td>Blood cholesterol assay</td>
</tr>
<tr>
<td>Stethoscope</td>
<td>Pulse oximeter</td>
</tr>
<tr>
<td>Thermometer</td>
<td>Nebulizer</td>
</tr>
</tbody>
</table>

---

*For facilities with nonphysician health workers, a validated blood pressure measurement device with digital reading is preferable for accurate measurement of blood pressure.

**Disposable mouth pieces required. Peak flow meters with one-way flow preferable.
<table>
<thead>
<tr>
<th><strong>Diagnosis</strong></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Hypertension</td>
<td>Blood pressure at registration</td>
</tr>
<tr>
<td>Diabetes</td>
<td>Weight (in kg)</td>
</tr>
<tr>
<td>Hyperlipidemia</td>
<td>BMI</td>
</tr>
<tr>
<td>COPD</td>
<td>Systolic Blood Pressure at registration</td>
</tr>
<tr>
<td>Asthma</td>
<td>Total cholesterol (mg/dL)</td>
</tr>
<tr>
<td>CVD risk - lab based</td>
<td>Random blood glucose (mg/dL)</td>
</tr>
<tr>
<td>CVD risk - non lab based</td>
<td>Fasting blood glucose (mg/dL)</td>
</tr>
</tbody>
</table>

**History of NCD**

- Hypertension
- Diabetes
- Hyperlipidemia
- COPD
- Asthma
- CVD risk - lab based
- CVD risk - non lab based

**Investigations**

<table>
<thead>
<tr>
<th>Test</th>
<th>Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fasting blood glucose (mg/dL)</td>
<td>Yes / No</td>
</tr>
<tr>
<td>Random blood glucose (mg/dL)</td>
<td>Yes / No</td>
</tr>
<tr>
<td>Hemoglobin A1C (%)</td>
<td>Yes / No</td>
</tr>
<tr>
<td>Serum potassium (mEq/L)</td>
<td>Yes / No</td>
</tr>
<tr>
<td>Serum creatinine (mg/dL)</td>
<td>Yes / No</td>
</tr>
<tr>
<td>Serum urea (mg/dL)</td>
<td>Yes / No</td>
</tr>
<tr>
<td>Total cholesterol (mg/dL)</td>
<td>Yes / No</td>
</tr>
<tr>
<td>Urine protein</td>
<td>Yes / No</td>
</tr>
<tr>
<td>Foot examination</td>
<td>Yes / No</td>
</tr>
<tr>
<td>Fundus examination</td>
<td>Yes / No</td>
</tr>
<tr>
<td>General cancer screening</td>
<td>Yes / No</td>
</tr>
<tr>
<td>Cervical cancer screening</td>
<td>Yes / No</td>
</tr>
</tbody>
</table>

**Assessment**

- Tobacco use - smoking
- Alcohol use
- Tobacco use - smokeless

**Patient Information**

<table>
<thead>
<tr>
<th>Field</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>Patient Name</td>
<td></td>
</tr>
<tr>
<td>Gender</td>
<td>Male / Female / Other</td>
</tr>
<tr>
<td>Date of Birth</td>
<td></td>
</tr>
<tr>
<td>Nationality</td>
<td></td>
</tr>
<tr>
<td>Email</td>
<td></td>
</tr>
<tr>
<td>Contact no.</td>
<td></td>
</tr>
<tr>
<td>Address Line 1</td>
<td></td>
</tr>
<tr>
<td>Address Line 2</td>
<td></td>
</tr>
<tr>
<td>Date</td>
<td></td>
</tr>
<tr>
<td>NCD ID</td>
<td></td>
</tr>
</tbody>
</table>

**Annex 4.4: Sample Clinical Record**
<table>
<thead>
<tr>
<th>Medicines for Hypertension</th>
<th>Medicine 1</th>
<th>Dose</th>
<th>Advice</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Medicines for Diabetes</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Medicines for Hyperlipidaemia</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Medicines for COPD</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Medicines for Asthma</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Others</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Date for follow up</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Medicines dispensed</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Reason for referral</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Referred - Yes / No</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Signature of Doctor</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>TREATMENT</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>NEW COMPLICATIONS ON FOLLOW UP VISITS</td>
<td>TREATMENT</td>
<td></td>
<td></td>
</tr>
<tr>
<td>--------------------------------------</td>
<td>-----------</td>
<td></td>
<td></td>
</tr>
<tr>
<td>DM Medicine 1</td>
<td>HTN Medicine 1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>DM Medicine 2</td>
<td>HTN Medicine 2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>HTN Medicine 3</td>
<td>Fundus examination</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fasting blood glucose</td>
<td>Total cholesterol</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Serum Creatinine</td>
<td>Serum urea</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Random blood glucose</td>
<td>Serum potassium</td>
<td></td>
<td></td>
</tr>
<tr>
<td>HbA1c</td>
<td>Urine protein</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Others</td>
<td>Foot examination</td>
<td></td>
<td></td>
</tr>
<tr>
<td>NSD Medicine 1</td>
<td>Not done / Normal</td>
<td></td>
<td></td>
</tr>
<tr>
<td>NSD Medicine 2</td>
<td>Not done / Normal</td>
<td></td>
<td></td>
</tr>
<tr>
<td>NSD Medicine 3</td>
<td>Not done / Normal</td>
<td></td>
<td></td>
</tr>
<tr>
<td>NSD Medicine 4</td>
<td>Not done / Normal</td>
<td></td>
<td></td>
</tr>
<tr>
<td>NSD Medicine 5</td>
<td>Not done / Normal</td>
<td></td>
<td></td>
</tr>
<tr>
<td>NSD Medicine 6</td>
<td>Not done / Normal</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**INVESTIGATIONS**

**ASSESSMENT**
<table>
<thead>
<tr>
<th>No.</th>
<th>Indicator</th>
<th>Source of data</th>
<th>Reporting frequency</th>
<th>Considerations in the interpretation</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Six-monthly control of blood pressure among people treated for hypertension</td>
<td>Health facility record</td>
<td>Once in six months</td>
<td>Feasible in all settings in primary health care and a core indicator for quality of services</td>
</tr>
<tr>
<td>2</td>
<td>Control of blood pressure among people with hypertension within the programme</td>
<td>Aggregated reports from all the health facilities reporting the hypertension indicator in a defined subnational area; estimation of hypertension prevalence</td>
<td>Once in 12 months</td>
<td>This will give estimated community control rates with the numerator coming from facilities reporting as part of the programme (in some instances patients may be receiving BP meds from private sector or other levels of care within the public system)</td>
</tr>
<tr>
<td>3</td>
<td>Availability of core cardiovascular disease/ diabetes drugs</td>
<td>Aggregated reports from all the health facilities reporting drug availability indicators in a defined subnational area</td>
<td>Once in 3 months</td>
<td>This is for the programme quality control and will assist with forecasting of medicines and improvements in supply chain management</td>
</tr>
<tr>
<td>4</td>
<td>Hypertension control in the population</td>
<td>Population-based sample survey (STEPS or similar survey)</td>
<td>Once in 5 years</td>
<td>Population-level survey as part of national survey or a special survey for the programme</td>
</tr>
<tr>
<td>5</td>
<td>Proportion of eligible persons receiving drug therapy and counselling (including glycaemic control) to prevent heart attacks and stroke (1)</td>
<td>Population-based sample survey</td>
<td>Once in 5 years</td>
<td>Health statuscardiovascular disease risk factors, including blood pressure and blood lipids; data on health-seeking behaviour and access to care; health facility records. This programme is of particular interest in some emerging countries; therefore, the data from these countries will be examined separately.</td>
</tr>
</tbody>
</table>

### TABLE 1: INDICATORS FOR HYPERTENSION AND CVD

**HEARTS Technical package for cardiovascular disease management in primary health care: systems for monitoring.**

[https://apps.who.int/iris/bitstream/handle/10665/260423/WHO-NMH-NVI-18.5-eng.pdf;sequence=1](https://apps.who.int/iris/bitstream/handle/10665/260423/WHO-NMH-NVI-18.5-eng.pdf;sequence=1)
<table>
<thead>
<tr>
<th>Indicator Description</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of patients being treated for diabetes</td>
<td>Frequency of reporting: monthly</td>
</tr>
<tr>
<td>Number of patients and number of new patients with diabetes</td>
<td>Denominator: number of patients with diabetes in the past year</td>
</tr>
<tr>
<td>Control rate among people treated for diabetes</td>
<td>Numerator: number of new diabetes complications in the past year</td>
</tr>
<tr>
<td>Frequency of reporting: every 6 months</td>
<td>Diabetic foot, nephropathy, retinopathy, neuropathy, cardiovascular diseases</td>
</tr>
<tr>
<td>Frequency of reporting: monthly</td>
<td>Diabetic foot, nephropathy, retinopathy, neuropathy, cardiovascular diseases</td>
</tr>
</tbody>
</table>

**TABLE 2: INDICATORS FOR DIABETES MELLITUS**

Diagnosis and management of type 2 diabetes (HEARTS-D)
[https://www.who.int/publications/i/item/who-ucn-ncd-20.1](https://www.who.int/publications/i/item/who-ucn-ncd-20.1)
ANNEX 4.6: ADDITIONAL READING


For more information, please contact:

World Health Organization
Department of NCD
20, avenue Appia
1211 Geneva 27
Switzerland

E-mail: NextGenNCD@who.int
https://www.who.int/teams/ncds/