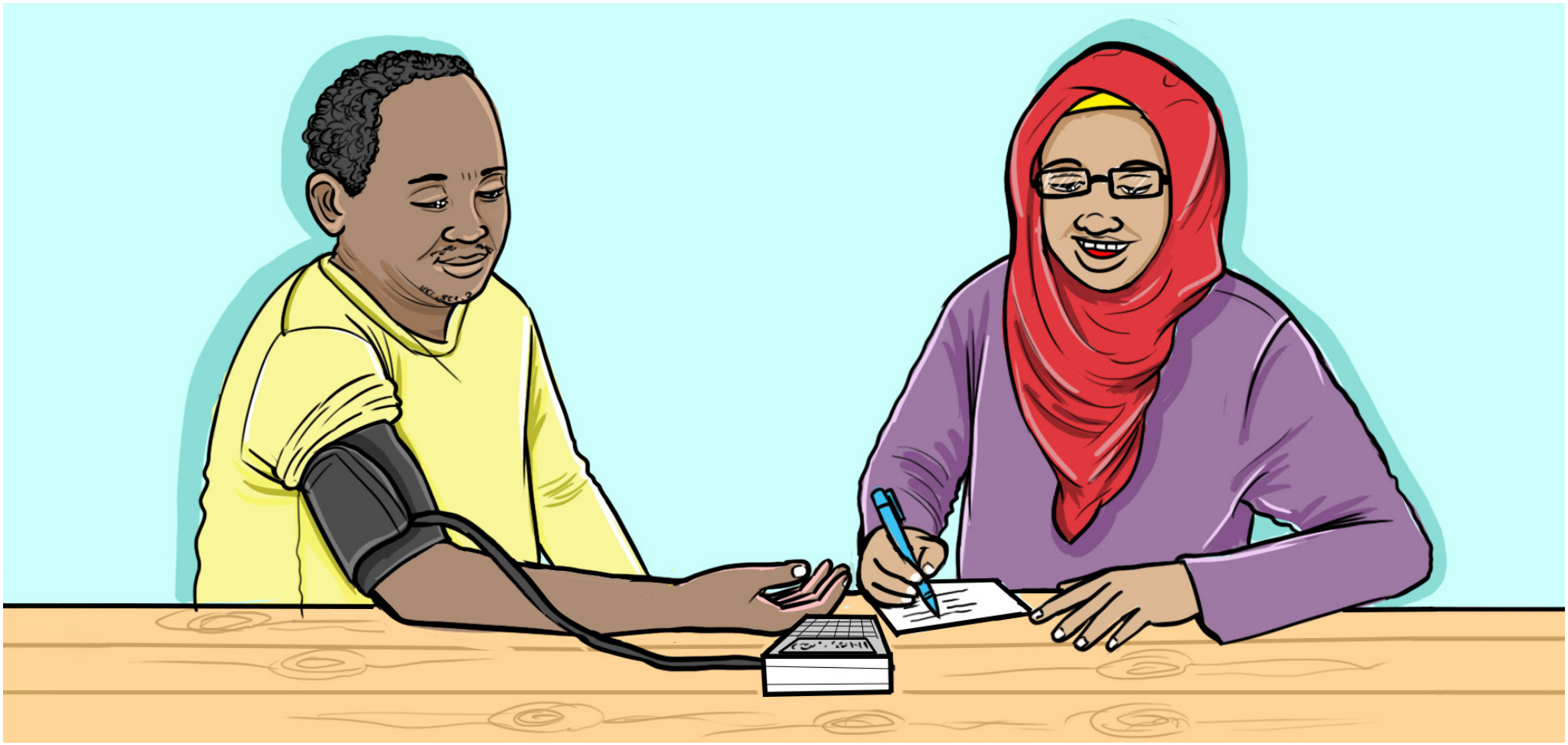

INTERNATIONAL RESCUE COMMITTEE

USAID FROM THE AMERICAN PEOPLE

Package of Essential Non-communicable diseases interventions for Humanitarian settings (PEN-H)

The PEN-H is made possible by the generous support of the American people through the United States Agency for International Development (USAID). The contents are the responsibility of the International Rescue Committee and do not necessarily reflect the views of USAID or the United States Government.

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DISCLAIMER

The recommendations in these clinical guides, have been taken from evidence based documents and guidelines (see reference lists) and require updating periodically. When exercising their judgement, professionals and health workers are expected to take this guidance fully into account, alongside the specific contexts of the humanitarian emergencies as well as individual needs, preferences and values of their patients. The recommendations in this package are not mandatory and the guidance does not override the responsibility of healthcare professionals to make decisions appropriate to the circumstances of the individual patient, in consultation with the patient and, where appropriate, their guardian.

Local administrators and providers have a responsibility to enable this guidance to be applied in humanitarian settings when individual health professionals and their patients or service users wish to use it. They should do so in the context of local and national priorities for funding and developing services, and in light of their duties to have due regard to the need to eliminate unlawful discrimination, and to reduce health inequalities. Nothing in this package should be interpreted in a way that would be inconsistent with compliance with those duties.

CONTENTS

ABBREVIATIONS

ACEI	Angiotensin Converting Enzyme Inhibitor
ARB	Angiotensin Receptor Blocker
BP	Blood Pressure
CVD	Cardiovascular disease
CeVD	Cerebrovascular disease
COPD	Chronic Obstructive Pulmonary Disease
CHWs	Community Health Workers
CHD	Coronary Heart Disease
FBG	Fasting Blood Glucose
FEV	Forced Expiratory Volume
HbA1c	Glycated haemoglobin
NCDs	Noncommunicable Diseases
PEN-H	Package of Essential NCD Interventions for Humanitarian Settings
PEFR	Peak Expiratory Flow Rate
RBG	Random Blood Glucose
TIA	Transient Ischemic Attack
WHO PEN	World Health Organization Package of Essential Noncommunicable Disease Interventions for Primary Care

PEN-H PART I

BACKGROUND, PURPOSE AND HOW TO USE THE PACKAGE

CONTENTS

BACKGROUND

IS THERE A NEED FOR THIS PACKAGE?

The world is facing increasing numbers of humanitarian emergencies with health consequences from a range of crises, including natural disasters, conflicts, chemical or radio-nuclear spills and infectious disease outbreaks. Many settings are complex, with more than one cause. In these settings, the infrastructure, supplies and the health workforce is often weakened, increasing the challenges of delivering good-quality care. Not only is there a primary surge in health demand to respond to the initial emergency, but if the emergency is protracted there is often a secondary surge of demand in the following months or years.

Due to their growing prevalence, Noncommunicable Diseases (NCDs) have become a major public health threat in humanitarian settings around the world. This package provides health workers with guidance, to facilitate the delivery of quality NCD care in these situations. When national guidance is not available, PEN-H may be adapted to suit national contexts. The package could also complement national guidance for the management of NCDs in humanitarian settings.

HOW COMMON ARE NCDS?

Noncommunicable diseases are the leading causes of death and disability worldwide, including in low- and middle-income countries. Common NCDs include cardiovascular disease, diabetes, chronic respiratory diseases and cancer. In emergency contexts epilepsy and kidney disease are also common NCDs.

In 2014, the global prevalence of hypertension and diabetes in adults aged 18 years and over was around 22% and 9% respectively[1]. In some low and middle-income country populations, particularly in the middle east, the prevalence of hypertension and diabetes can be as high as 36%[2] and 14%[3] respectively.

In an adult population of 10 000 people, there are likely to be:

- 1500–3000 people with hypertension[4]
- 500–2000 people with diabetes[4]
- 3–8 acute heart attacks over a normal 90-day period[5]
- 4–16 acute strokes over a normal 90-day period[6]

ARE HUMANITARIAN SETTINGS ASSOCIATED WITH HIGHER NCD MORBIDITY AND MORTALITY?

Studies show that humanitarian settings are associated with increased NCD morbidity and mortality that may persist for years following the onset of a crises[7]. In the aftermath of a crises, people living with an NCD are particularly vulnerable to exacerbations of their condition. Factors contributing to this vulnerability include:

- The interruption of regular medical treatment often with the destruction of health care facilities
- Severe situational stress and anxiety
- Degradation of environmental conditions with the inhalation of smoke and other toxic chemicals
- Physical injuries
- Shortage of water and regular food supplies
- Overcrowding and poor living standards with the loss of shelter, livelihood and the damage of essential societal infrastructure

WHAT IS THE MAIN PURPOSEOF THIS PACKAGE AND WHO IS THE TARGET AUDIENCE?

The main purpose of PEN-H, is to reduce morbidity and mortality due to NCDs by:

1. Providing continuity of care for people living with NCD
2. Treating incident life-threatening NCD conditions
3. Preventing exacerbations of NCDs
4. Facilitating post-acute health system recovery.

The guidance included in PEN-H, is derived from evidence based guidelines including the WHO Package of Essential NCD interventions (WHO PEN)[8]. The implementation of PEN-H, specifically designed for humanitarian situations, will not only provide continuity of care for people living with NCD but also facilitate post-disaster health system recovery. For example, the swift implementation of WHO PEN in the Philippines following Typhoon Haiyan in 2013 resulted in increased availability of trained health service providers; improved the availability of essential equipment, supplies and medicines; strengthened functional referral systems; and increased the use of monitoring tools- all within a few months of the typhoon.[9]

The package is primarily intended for nurses, nurse practitioners, medical officers and other clinical staff who provide NCD care in humanitarian settings. Clinical guides 1 to 6 and the accompanying clinical protocols provide minimum standards and priority actions for the management of cardiovascular disease, diabetes, chronic respiratory disease and epilepsy in adults living in these contexts. The package also includes flowcharts to support community health workers (CHWs) to deliver NCD care in humanitarian settings.

HOW TO USE PEN-H

WHICH NCDS DOES THE PEN-H PROVIDE GUIDANCE FOR?

Due to limitations in infrastructure, human resources, and financial resources, it is feasible to implement only select NCD interventions in humanitarian settings. This package has given priority to a core set of cost-effective NCD interventions which are feasible to be implemented in crisis situations and which have a high potential of improving NCD outcomes at low costs.

The current content of PEN-H focuses on cardiovascular diseases, diabetes, chronic respiratory disease and epilepsy.

WHAT ARE UNDERLYING ASSUMPTIONS OF THE PEN-H?

This package assumes that despite the nature of the crises or disaster that has occurred, primary care physicians, nurse practitioners, nurses and\or other appropriately trained health workers will be available with access to essential medicines and limited referral facilities. Based on the national context, using this package under the supervision of a physician, nurse practitioners and nurses could support medical treatment and refill of medicines for patients.

WHAT ARE THE COMPONENTS OF PEN-H?

The PEN-H has the following components:

Health workers who use PEN-H must first review the clinical guides which provide basic medical knowledge about cardiovascular disease, diabetes, bronchial asthma, chronic respiratory disease and epilepsy. They also need formal training to implement the simplified clinical protocols which are designed to help manage these medical conditions in humanitarian settings. Training material for this purpose will be prepared in due course. Supervision, audit and monitoring will be required to ensure that quality of care provided is satisfactory. Protocols A-D are for CHWs. With suitable training and basic equipment they can support NCD care, by interacting with and advising patients and promoting the self-care guides .

A Facility Readiness Checklist is also provided to identify and address the deficiencies in basic health system elements required to implement the clinical protocols. Self- care guides are included to help patients to manage their health and disease conditions.

For the effective implementation of this package, health authorities need to take necessary steps towards ensuring the necessary infrastructure is in place. Adaptation to the national context and harmonization with existing guidelines are encouraged. The package is built to correspond to the list of NCD drugs in the Interagency Emergency Health Kit 2017[10] and WHO NCD kit 2017[11]. PEN-H will need to be adapted for different crisis situations based on the availability of drugs and the nature, severity and phase of the crises.

PEN-H PART II

CLINICAL GUIDES

CONTENTS

INTRODUCTION

Before applying PEN-H to manage NCD patients, health workers must go through formal training using the training material and the clinical guides. Clinical guides 1- 6 and the accompanying clinical protocols provide nurses, nurse practitioners, medical officers and other clinicians with minimum standards and priority actions for the management of NCDs. The clinical guides are intended to sensitize the PEN-H package users to selected NCDs and to improve their understanding of the simplified, action-oriented flowcharts. For each of the NCDs addressed in the package the clinical guides provide basic information on:

1. What is the condition?
2. What causes it?
3. How does it present?
   (What does the patient tell you and what do you find on examination)
4. How is it diagnosed ?
5. What are the complications?
6. How is it treated?
7. What can be done to prevent the condition?

2.1 CARDIOVASCULAR DISEASES

WHAT ARE CARDIOVASCULAR DISEASES?

Cardiovascular diseases (CVD) are disorders of the heart and blood vessels that supply the heart and brain. CVD include the following:

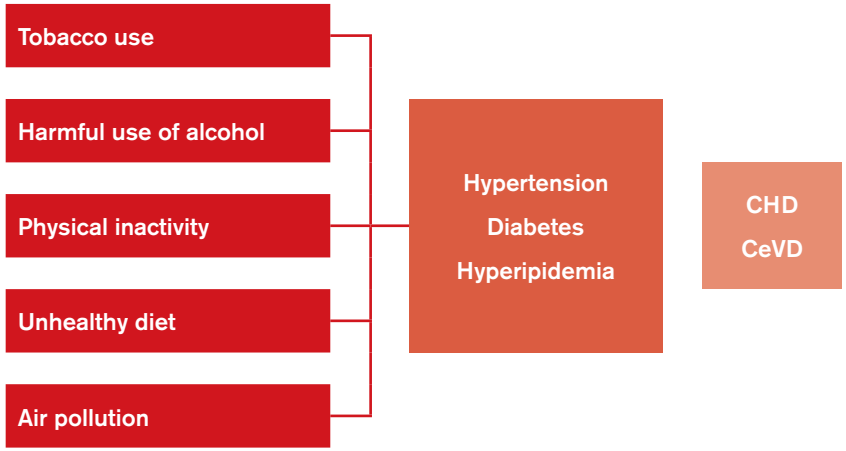
- **Coronary Heart Disease (CHD)**
- **Cerebrovascular Disease (CeVD)**
- **Congenital heart disease**
- **Rheumatic heart disease**

Coronary heart disease and cerebrovascular disease are the most common types of CVD affecting the blood vessels of the heart and brain respectively. This document only addresses CHD, and CeVD and their major risk factors such as hypertension and diabetes. Congenital heart diseases affect the structure of the heart and usually presents as valve abnormalities or wall (septal) defects. Rheumatic heart disease mainly affects heart valves and is caused by an abnormal immune reaction to a streptococcal throat infection.

WHAT CAUSES CHD AND CeVD?

CHD and CeVD are caused by a pathological process known as atherosclerosis, that gradually occludes the lumen of blood vessels due to deposition of fatty material. Atherosclerosis is caused by a combination of behavioral - including tobacco use, harmful use of alcohol, physical inactivity and unhealthy diet and environmental including both indoor and outdoor air pollution and environmental toxins.

FIGURE 2.1
Behavioral, environmental and metabolic risk factors of CHD and CeVD



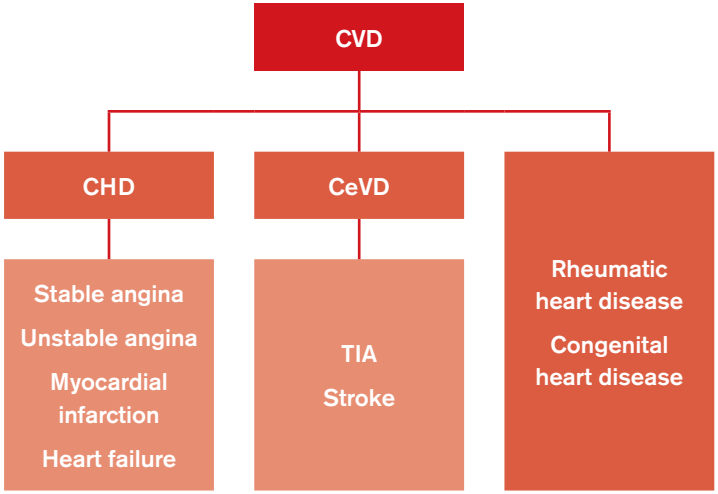
When people are exposed to these behavioral and environmental risk factors long-term, abnormalities occur in their metabolism resulting in raised blood pressure (hypertension), raised blood glucose (diabetes) and raised blood lipids (hyperlipidemia). All these are known as metabolic risk factors of CVD (Figure 2.1) and are modifiable. Age and family history are two important non-modifiable cardiovascular risk factors.

HOW DO CHD AND CEVD PRESENT?

Coronary heart disease can present in any one of the following ways (Figure 2.2):

- stable angina (chest pain which has a consistent pattern)
- unstable angina (progressive worsening of chest pain)
- myocardial infarction (heart attack)
- heart failure
- cardiac arrhythmia (irregular heart rhythm)

FIGURE 2.2
Presentations of cardiovascular disease (CVD)



If the blood flow to the heart is interrupted, the supply of oxygen and glucose is impeded causing ischemic chest pain or angina. If chest pain begins with a known amount of exertion, eases off with rest and is predictable, it is known as stable angina. When chest pain is new in onset, or more frequent and occur with less exertion, it is known as unstable angina. If the interruption of blood supply to the heart is severe, heart muscle is damaged and results in a myocardial infarction (heart attack).

Cerebrovascular disease can present in the following ways (Figure 2.2):

- Transient Ischemic Attack (TIA)
- Cerebrovascular thrombosis or hemorrhage (stroke)

The World Health Organization defines stroke as a clinical syndrome of rapid onset of focal cerebral (brain) deficit, lasting more than 24 hours (unless interrupted by surgery or death) with no apparent cause beyond a vascular one. If the focal cerebral deficit is temporary and recovers within a few hours it is known as a transient ischemic attack.

WHAT WILL A PERSON WITH CHD COMPLAIN OF?

A person suffering from coronary heart disease may complain of one or more of the following:

- chest pain (angina)
- shortness of breath (dyspnea)
- palpitations (when heat beat is felt)

Chest pain of CHD is felt in the center of the chest known as the retrosternal area. It lasts for a few minutes. It is often triggered by physical activity and relieved by rest. It may also be brought on by strong emotions, stress, or extreme heat or cold. Chest pain of CHD is relieved by nitrates. Nitrates dilate blood vessels of the heart improving the flow of blood. Nitrates are usually taken in the form of sublingual tablets or oral sprays.

People who have angina are at high risk of having a major heart attack or myocardial infarction. Pain of myocardial infarction is extremely severe and is often felt in the retrosternal area. The pain may spread to the arms, back, jaw, neck and stomach. Chest pain lasts for more than 3-4 minutes and is not fully relieved by nitrates. It may be associated with sweating, vomiting shortness of breath, palpitations and fainting (see Table below).

Most people with CHD also have one or more cardiovascular risk factors; tobacco use, overweight, harmful use of alcohol, physical inactivity, hypertension, diabetes and raised blood lipids.

CHARACTERISTICS OF CHEST PAIN BY CONDITION			
FEATURES OF CHEST PAIN	**STABLE ANGINA**	**ACUTE CORONARY SYNDROME (MYOCARDIAL INFARCTION OR UNSTABLE ANGINA)***	**MUSCULOSKELETAL PAIN**
SITE	usually centre of chest (retrosternal)	retrosternal	anywhere in the chest
NATURE	pain feels like tightness, heaviness, constriction	pain can be similar to stable angina, but may be more severe or progressive and is often not related to or provoked by exercise	aching
SEVERITY	discomfort or pain	severe	mild to severe
DURATION	5-10 minutes	lasts more than 15 minutes	variable
RELATION TO EXERTION	onset with exertion goes away with rest	no relation to exertion, present at rest	related to movement of body and limbs
RADIATION	may radiate to arms, neck, jaw, upper abdomen	may radiate to arms, neck, jaw, upper abdomen	usually no radiation
ACCOMPANYING SYMPTOMS		nausea, vomiting or sweating, giddiness ,palpitations (thumping sensation of heart) suggest myocardial infarction	may be worse with movement
OTHER FEATURES	responds to sublingual glyceryl trinitrate	change in the pattern of stable angina and/or worsening of symptoms no response or incomplete response to glyceryl trinitrate	may vary with posture

**Symptoms may be atypical in women, elderly or diabetic patients. Pneumothorax can also cause severe chest pain.*

WHAT WOULD THE PHYSICAL EXAMINATION OF A PATIENT WITH CHD REVEAL?

The physical examination may be normal but may also reveal abnormalities in the pulse rate, heart rhythm and blood pressure.

HOW IS CHD DIAGNOSED?

Diagnosis can be confirmed if the resting electrocardiogram shows typical abnormalities. If the resting electrocardiogram is normal, an exercise electrocardiogram and coronary angiography may be necessary.

Myocardial infarction is confirmed using electrocardiography and blood tests. Myocardial infarction results in specific changes in the electrocardiogram. Laboratory tests are done to detect cardiac enzymes (e.g. troponins), that leak into the blood stream when heart muscle is damaged due to infarction.

Myocardial infarction must be urgently diagnosed to determine whether it would be useful to treat with thrombolytic medications (clot-busting drugs such as streptokinase) that opens the blocked blood vessels and stop further heart muscle damage.

If electrocardiography and blood tests are not available in humanitarian settings a probable diagnosis of myocardial infarction must be made based on the history of chest pain alone.

WHAT WOULD THE HISTORY AND PHYSICAL EXAMINATION OF A PATIENT WITH CeVD REVEAL?

A person suffering from cerebrovascular disease may give a history of one or more of the following:

FACE: drooping of one side of face

BODY: weakness of one side of the body and unsteadiness

SPEECH: difficulty in speaking

MENTAL STATUS: confusion

The effects of a stroke depend on which part of the brain is injured and how severely it is affected. A stroke may affect just one part of the body, such as the face, arm or a leg or it can completely paralyze one side of the body. A very severe stroke can cause sudden death.

The clinical diagnosis of stroke is usually made using the history and physical examination. History includes asking about what symptoms are present, when they began, and if they are improving, progressing, or remaining the same. Past medical history will look for stroke risk factors and medications. Examination of the nervous system is performed to detect neurological deficits; weakness of arm and leg on one side, paralysis of cranial nerves, difficulty in speaking, and/or loss of sensation of one side of the body.

WHAT TESTS CAN BE DONE TO ASSIST THE DIAGNOSIS OF CeVD?

Blood tests and computerized tomography of the brain are used diagnose and plan treatment doe CeVD patients. Because these tests are not usually available in humanitarian settings, stroke diagnosis must be made based on the history and physical signs alone. To potentially “reverse” the stroke with thrombolytic medications (clot-busting drugs), diagnosis must be made urgently.

FIGURE 2.3A
Healthy behaviors to prevent CHD and CeVD (adapted and reproduced with permission from the World Health Organization)

STAYING HEALTHY IS AS EASY AS *ABCDE*

AVOID ALCOHOL

DON'T USE
TOBACCO PRODUCTS

BE PHYSICALLY ACTIVE

EAT PLENTY OF
VEGETABLES AND FRUITS

CUT DOWN ON
SALT AND SUGAR

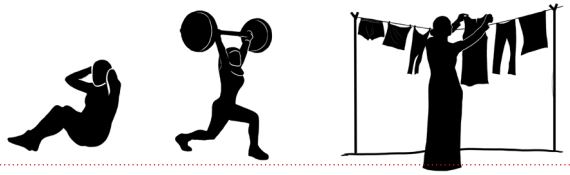
WHAT CAN BE DONE TO PREVENT CHD AND CeVD?

Tobacco use, harmful use of alcohol, an unhealthy diet, and physical inactivity increase the risk of CVD. Stopping tobacco use reduces the chance of a heart attack or stroke from the moment of cessation of tobacco use. Engaging in physical activity for at least 30 minutes on most days of the week (at least 150 minutes a week), helps to prevent CVD (see Figure 2.3a and 2.3b). Eating at least 5 servings of fruit and vegetables a day, reducing fat intake and limiting the salt intake to less than one teaspoon a day protects health. Being overweight increases the risk of CVD. Regular physical activity (see self explanatory diagram below) combined with a healthy diet prevents weight gain (see Flowcharts 3.19 on page 75 and 3.20 on page 79). In addition, it is important to maintain optimal blood pressure, blood glucose and blood lipids through behavioral change and if necessary, medications.

FIGURE 2.3B
Healthy behaviors to prevent CHD and CeVD (adapted and reproduced with permission from the World Health Organization)

LOSE A FEW KILOS AND GAIN A FEW YEARS

30 MINUTES DAILY



PREVENT. TREAT. BEAT DIABETES.

The above guidance must be tailored to humanitarian settings. For example, if walking is not possible due to safety reasons physical activity can include household activities such as washing, cleaning and cooking. Similarly, reducing the amount of salt and oil added at cooking is a good start for making the diet healthy.

WHAT CAN BE DONE FOR CHD AND CeVD IN HUMANITARIAN SETTINGS?

The first step is to suspect CHD and CeVD when a person has one or more of the following:

- symptoms of angina or heart attack
- symptoms of TIA or stroke
- shortness of breath
- palpitations
- hypertension
- diabetes
- features of kidney disease
- features of heart failure

In humanitarian settings there are limited facilities for the diagnosis and treatment of NCDs. As shown in the Flowcharts in PEN-H, however, heart attacks, strokes, heart failure and death can be prevented by basic treatment of people with established CVD (see Flowcharts 3.1 on page 35, 3.3 on page 39 and 3.4 on page 40) and high cardiovascular risk (see Flowchart 3.8 on page 45). Hypertension and diabetes can be managed to prevent complications (see Flowcharts 3.9 on page 46, 3.10 on page 51 and Flowchart 3.11, 3.12, 3.13 respectively starting from page 52). Heart failure (see Flowchart 3.6 on page 43) can be treated. Depending on facilities available, some people with CHD and CeVD may require referral to hospital, for further assessment and treatment.

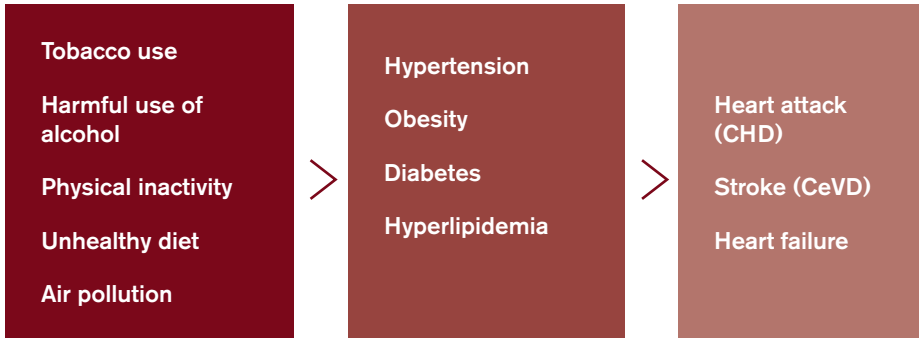
2.2 HYPERTENSION

WHAT IS HYPERTENSION?

Persistently raised blood pressure is defined as hypertension and . is created by the force of blood pushing against the walls of blood vessels (arteries) as it is pumped by the heart.

It is one of the major risk factors of coronary heart disease (heart attack) and cerebrovascular disease (stroke) (Figure 2.4).

FIGURE 2.4
Cardiovascular risk factors



Blood pressure is measured in millimeters of mercury (mm Hg) and is recorded as two numbers usually written one above the other. The upper number is the systolic blood pressure - the highest pressure generated in blood vessels when the heart contracts, or beats. The lower number is the diastolic blood pressure - the lowest pressure in blood vessels in between heartbeats when the heart muscle relaxes. Normal adult blood pressure is defined as a systolic blood pressure of 120 mm Hg and a diastolic blood pressure of 80 mm Hg. Hypertension is defined as a systolic blood pressure equal to or above 140 mm Hg and/or diastolic blood pressure equal to or above 90 mm Hg.

WHAT CAUSES HYPERTENSION?

When hypertension develops in people below 30 years old, it is important to exclude a secondary cause such as kidney disease, endocrine disease or malformations of blood vessels. In most people with hypertension above the age of 30, no specific cause can be identified and genetic factors may play a role. Several behavioral factors which increase the risk of hypertension include:

- too much salt and fat in the diet
- not eating enough fruit and vegetables
- harmful use of alcohol
- physical inactivity
- poor stress management.

HOW DOES HYPERTENSION PRESENT?

Hypertension usually appears after the third decade of life and may be detected during routine medical examination. Hypertension often coexists with other cardiovascular risk factors such as diabetes. Some people present with complications of hypertension and are unaware that they have the condition.

There is a common misconception that people with hypertension always experience symptoms. This is false as most people with hypertension are asymptomatic. Sometimes hypertension causes symptoms which should not be ignored including headache, shortness of breath, dizziness, chest pain, palpitations of the heart and nose bleeds.

HOW IS HYPERTENSION DIAGNOSED?

Hypertension is diagnosed by measuring blood pressure. Current options for blood pressure measuring devices include mercury sphygmomanometers, aneroid manometers and automatic electronic devices. Mercury sphygmomanometers and aneroid manometers use the auscultatory technique for measuring blood pressure. It consists of the transmission and interpretation of a signal (Korotkoff sound) from a subject via a stethoscope to an observer. This technique requires that health workers be trained and assessed for accuracy of measurement. For some people, the anxiety of visiting a doctor may temporarily raise their blood pressure ("white coat hypertension").

Hypertension should not be diagnosed with a single reading unless the blood pressure reading is 180/110 mm Hg or above (This level of blood pressure calls for prompt treatment). Because blood pressure varies throughout the day based on degree of stress/ relaxation and other environmental factors, blood pressure measurements should be done at rest on at least two occasions, usually within a few days or weeks of one another. This is particularly true in emergency settings where people are under increased stress which impacts their blood pressure.

WHAT IS THE CORRECT TECHNIQUE FOR MEASURING BLOOD PRESSURE?

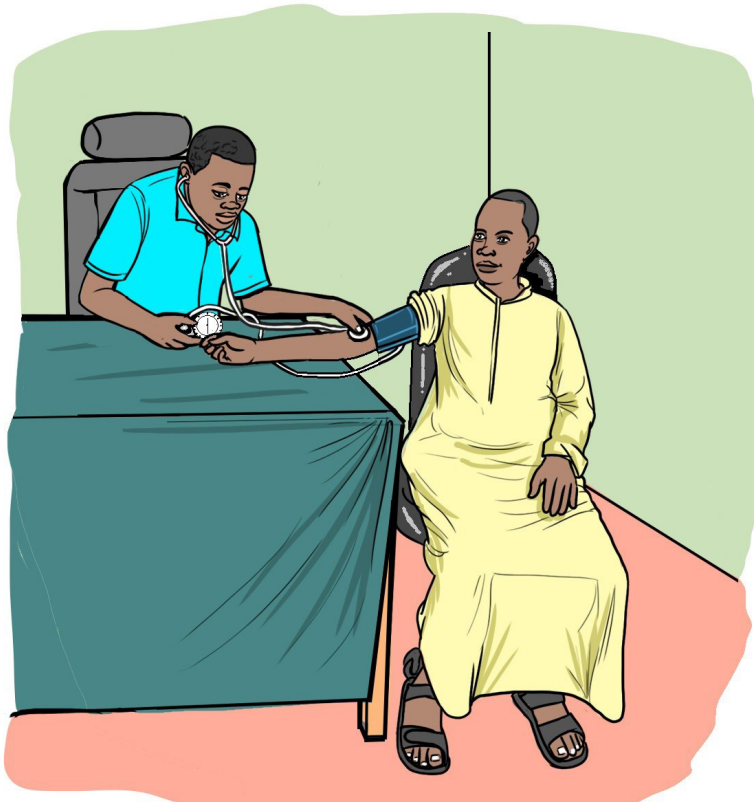
Measuring blood pressure is necessary for the assessing a person`s cardiovascular risk (risk of developing heart attack or stroke), for diagnosing hypertension and for monitoring a patient's response to blood pressure lowering therapy. For detailed steps on taking blood pressure, see Box 3.3 on page 49.

One blood pressure reading may not accurately reflect a persons underlying blood pressure due to a number of reasons, including:

- inherent variability of blood pressure
- incorrect technique (e.g. cuff over clothing, incorrect cuff size, uncalibrated device)
- patterns of blood pressure such as white coat effect

All blood pressure measuring devices must be serviced at least once per year. Many factors can affect the accuracy of blood pressure measurement:

- cuff too small
- cuff over clothing
- persons back or arm unsupported
- smoking or caffeine intake within two hours of measurement
- distended bladder



WHAT CAN BE DONE TO PREVENT HYPERTENSION?

The risk of developing hypertension increases with age but can be prevented by adopting healthy behaviors as explained above (see self-care guide on preventing heart attacks and strokes on page 97).

WHAT ARE THE COMPLICATIONS OF HYPERTENSION?

The complications of hypertension include:

- **heart attack** (heart muscle damage due to poor blood supply)
- **stroke** (brain damage due to poor blood supply)
- **heart failure** (weak pumping action of the heart)
- **kidney failure** (loss of kidney function)
- **retinopathy** (damage to blood vessels in the retina)

It is dangerous to ignore high blood pressure, because this increases the chances of life-threatening complications. The higher the blood pressure, the higher the likelihood of harmful consequences to the heart and blood vessels in major organs such as the heart, brain and kidneys.

HOW IMPORTANT IS THE ASSESSMENT OF CARDIOVASCULAR RISK?

It is important to recognize that the risk of damage to vital organs (known as cardiovascular risk), from hypertension depends not only on blood pressure but also on the presence of other cardiovascular risk factors such as tobacco use, physical inactivity, diabetes, high cholesterol, harmful use of alcohol, unhealthy diet, low socioeconomic status and family history of CVD. Conducting a cardiovascular risk assessment will help to select those that are most vulnerable to develop heart attacks and strokes and offer them treatment (see references 8, 12-14 for more detail) .

HOW IS HYPERTENSION TREATED?

Mild hypertension (systolic blood pressure 140-159 mm Hg and/or diastolic blood pressure 90-99 mm Hg) without other risk factors such as diabetes, can be treated with nonpharmacological approaches including a combination of the following:

- reduce salt in the diet to less than five grams a day
- eat at least five servings of fruits and vegetables, (see Flowchart A4 on page 88)
- avoid harmful use of alcohol (see Flowchart A2 on page 85)
- engage in at least 30 minutes of physical activity on most days of the week (150 minutes of physical activity a week) (see Flowchart A3 on page 87).

If the blood pressure level is persistently at or above 160/100 mm Hg antihypertensive medicines are necessary (see Flowcharts 3.9 on page 46 and 3.10 on page 51), including:

- thiazide - like diuretics (e.g. hydrochlorothiazide)
- angiotensin converting enzyme inhibitors (e.g. enalapril)
- angiotensin receptor blockers (e.g. losartan)
- calcium channel blockers (e.g. amlodipine) and
- vasodilators

In addition, people with hypertension with moderate or high cardiovascular risk need to be given lipid lowering medications (e.g. statins), as a preventive measure against heart attack and stroke.

WHAT CAN BE DONE FOR HYPERTENSION IN HUMANITARIAN SETTINGS?

People with hypertension can present in the following ways:

- **established diagnosis** of hypertension
- a **complication** of hypertension
- **symptoms** of hypertension
- **detection at routine medical examination**

As shown in the PEN-H flowcharts, effective treatment is available to control hypertension in order to prevent heart attacks, strokes, kidney damage and heart failure (see Flowchart 3.9 on page 46 and 3.10 on page 51). Medications should be targeted at people with medium or high risk of developing these complications. This is particularly important in humanitarian settings, as limited resources need to be directed at those who need treatment most. For this to happen, patients presenting with hypertension should have a cardiovascular risk assessment, including when possible, tests for diabetes mellitus and other risk factors. Hypertension and diabetes are very closely linked, and one cannot be properly managed without attention to the other.

2.3 DIABETES

WHAT IS DIABETES MELLITUS?

Diabetes mellitus is a chronic, metabolic disease characterized by raised levels of blood sugar (blood glucose) (see Table 2.1). The two most common types of diabetes are type 1 and type 2 diabetes. Type 2 diabetes, usually occurs in adults, when the body becomes resistant to insulin or doesn't make enough insulin. Type 1 diabetes, also known as juvenile diabetes or insulin-dependent diabetes, is an autoimmune condition in which the pancreas produces little or no insulin. Type 1 diabetes occurs mainly in children and adolescents. Distinguishing between type 1 and type 2 diabetes is not always easy as it often requires relatively sophisticated laboratory tests for assessing pancreatic function.

TABLE 2.1
WHO Criteria for diagnosis of diabetes mellitus

Fasting plasma glucose	≥ 7.0 mmol/L (126 mg/dl)
or	
2 Zh plasma glucose (after ingestion of 75 g glucose load)	≥ 11.1 mmol/L (200 mg/dl)
or	
HbA1c	≥ 6.5% (≥ 48 mmol/mol)

WHAT CAUSES DIABETES?

TYPE 1. diabetes is characterized by insulin deficiency following destruction of the insulin-producing pancreatic beta cells, however, the exact causes of type 1 diabetes are unknown. It is generally agreed that type 1 diabetes is the result of a complex interaction between genes and environmental factors., though no specific environmental risk factors have been shown to cause a significant number of cases.

TYPE 2. The risk of type 2 diabetes is determined by an interplay of genetic and metabolic factors. Family history of diabetes, previous gestational diabetes, higher waist circumference and higher body mass index (BMI) are associated with increased risk of type 2 diabetes. High intake of saturated fatty acids, high total fat intake, inadequate consumption of dietary fibre and high intake of sugar-sweetened beverages, also substantially increase the risk of type 2 diabetes (see figures below).

HOW DOES DIABETES PRESENT?

Type 1 diabetes often presents with symptoms that prompt the patient to contact health services – excessive thirst, weight loss and copious urination or diabetic ketoacidosis. Type 2 diabetes often shows no symptoms, and some patients contact health services because of a complication such as vision loss, heart attack, stroke or limb ulcer. Type 2 diabetes develops slowly and there is often a very long period of time in which the disease is present but undetected.

HOW IS DIABETES DIAGNOSED?

Diabetes is diagnosed by measuring glucose in a blood sample taken while the patient is in a fasting state, or two hours after an oral load of glucose has been taken. Diabetes can also be diagnosed by measuring glycated haemoglobin (HbA1c) which reflects the average blood glucose concentration over the past 2-3 months, rather than the blood glucose concentration at that moment. This test is more costly than blood glucose measurement and is rarely available in humanitarian settings.

WHAT ARE THE COMPLICATIONS OF DIABETES?

When diabetes is not well managed, abnormally high blood glucose can have a life-threatening impact if it triggers conditions such as diabetic ketoacidosis or hyperglycemic hyperosmolar coma. Abnormally low blood glucose can occur when people with diabetes are on insulin or oral hypoglycemic agents and may result in seizures or loss of consciousness. This may occur after missing a meal or exercising, or if the dosage of anti-diabetic medication is too high.

Over time diabetes can lead to complications in many organs and can increase the risk of dying prematurely. Possible complications include heart attack, stroke, kidney failure, leg amputation, vision loss and nerve damage. Adults with diabetes have two or three times higher rates of CVD than adults without diabetes. The majority of cases of end-stage renal disease (ESRD) are caused by diabetes, hypertension or a combination of the two. Diabetes also increases the risk of lower extremity amputation because of infected, non-healing foot ulcers. In pregnancy, poorly controlled diabetes increases the risk of fetal death and other complications for both the mother and fetus.

HOW IS DIABETES TREATED?

The following behavioral changes promote health in general and help to control blood glucose levels.

- Eating a healthy diet (diet rich in fruits, vegetables, and fiber and low in salt and fat)
- Avoiding foods that are high in sugars, fats, and calories
- Maintaining a healthy body weight through regular physical activity and eating a healthy diet
- Avoiding harmful use of alcohol (more than one drink a day for women and more than two drinks a day for men is considered harmful. One standard drink is beer 250 ml or whisky 25 ml or wine 75-100 ml)
- Staying active (engaging in at least 30 minutes of physical activity most days of the week (at least 150 minutes a week).

If these approaches do not reduce the blood glucose adequately, medications are needed. In humanitarian and fragile settings, these approaches are often difficult to adopt and medications may need to be prescribed earlier to control blood sugar levels. People with type 1 diabetes require insulin for survival – without insulin, even for a short time, these individuals may face life-threatening consequences. In addition most people with diabetes require antiplatelet drugs, statins and antihypertensives to lower the risk of heart attacks and strokes.

WHAT ARE THE MAIN TYPES OF INSULIN?

Soluble insulin, when injected subcutaneously, acts in 30–60 minutes and the duration of action is up to eight hours (Table 2.2). Soluble insulin by the intravenous route is reserved for urgent treatment and has a very short half-life of only about five minutes with its effect disappearing within 30 minutes. When injected subcutaneously, intermediate-acting insulins take effect within 1–2 hours, lasting for 16–24 hours. They can be given once or twice daily. Long-acting insulins have an onset of action approximately four hours after subcutaneous injection and a duration of action up to 36 hours.

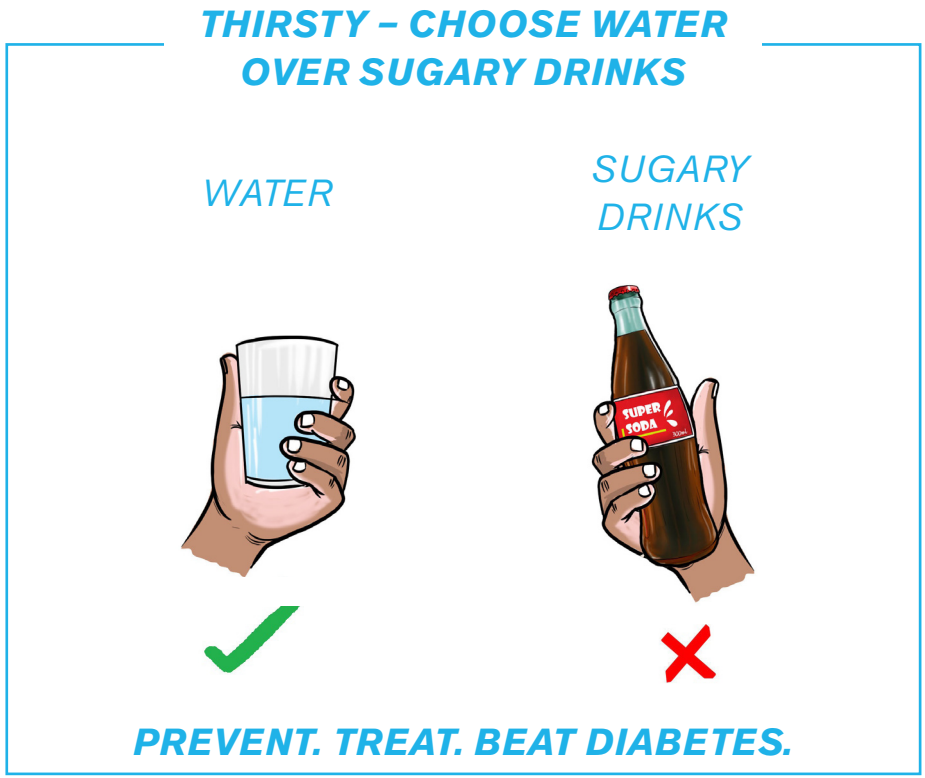
TABLE 2.2
Onset of action and duration of action of different types of insulin

TYPE OF INSULIN	ONSET OF ACTION	DURATION OF ACTION
Short acting insulin; Soluble insulin (Injection: 40 IU/ mL in 10- mL vial; 100 IU/ mL in 10- mL vial.)	30-60 minutes	8 hours
Intermediate insulin: compound insulin zinc suspension or isophane insulin (Injection: 40 IU/ mL in 10- mL vial; 100 IU/ mL in 10- mL vial)	1-2 hours	16-24 hours
Long-acting insulin	3-4 hours	11-24 hours
Ultra long acting insulin	3-4 hours	Up to 36 hours

WHAT CAN BE DONE TO PREVENT DIABETES?

Based on current knowledge, type 1 diabetes cannot be prevented. Effective approaches are available to prevent type 2 diabetes and to prevent the complications and premature death that can result from all types of diabetes. These include policies across whole populations that protects the health of everyone, regardless of whether they have diabetes. At the individual level, regular physical activity, eating healthily, avoiding tobacco use, avoiding harmful use of alcohol and controlling body weight, blood pressure and lipids can help to prevent diabetes and its complications (see the Figure 2.4 below).

FIGURE 2.4
Healthy behaviors to prevent diabetes (adapted and reproduced with permission from the World Health Organization)



PREVENT. TREAT. BEAT DIABETES.

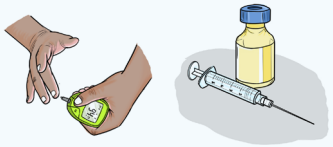
AVOID TOBACCO AND LIMIT ALCOHOL

KNOW YOUR RISK AND TAKE ACTION

GO FOR REGULAR CHECKUPS

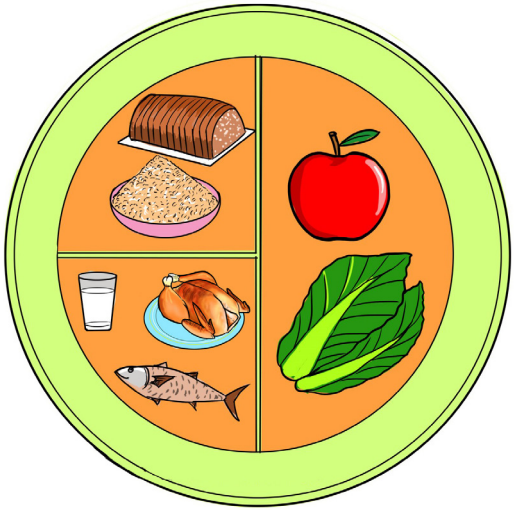
EAT MORE VEGETABLES AND FRUITS

TAKE PRESCRIBED MEDICINES



MAINTAIN A HEALTHY WEIGHT

FOR A HEALTHY WEIGHT, PUT LESS ON YOUR PLATE



WHAT CAN BE DONE FOR DIABETES IN HUMANITARIAN SETTINGS?

People with diabetes can present in the following ways:

- established diagnosis of diabetes
- symptoms of diabetes
- in diabetic coma (hypoglycemia or ketoacidosis)
- with a complication of diabetes such as CVD, renal failure or a non-healing foot ulcer
- detection at routine medical examination

People with diabetes are at high risk of developing heart attacks, strokes or kidney damage. Effective treatment is available to manage diabetes and to prevent these complications (see Flowcharts 3.11 on page 52 and 3.12 on page 56). Drug treatment may be required to optimize blood glucose, blood pressure and blood lipids in people with diabetes. For people with type 1 diabetes insulin must be given. Steps need to be taken to prevent and treat hypoglycemia particularly in insulin dependent diabetics.

2.4 BRONCHIAL ASTHMA

WHAT IS BRONCHIAL ASTHMA?

Asthma is a chronic disease of the airways of the lung characterized by recurrent attacks of breathlessness. Due to inflammation the airways swell, produce more mucus and become narrow making breathing difficult. Asthma can affect both children and adults.

WHAT CAUSES BRONCHIAL ASTHMA?

The causes of asthma are not completely understood but allergy plays an important role. The factors that trigger asthma include:

- indoor allergens (e.g. house dust mites in bedding and carpets, cockroach waste or particles of skin and dried saliva shed by pets, pet dander)
- outdoor allergens (e.g. pollens, molds, air pollution)
- tobacco smoke
- physical exercise
- cold air
- extreme emotional arousal such as anger or fear
- fumes, gases and chemical irritants in the workplace
- drugs such as aspirin, other non-steroid anti-inflammatory drugs, and beta-blockers.

HOW DOES BRONCHIAL ASTHMA PRESENT?

People with asthma usually present with breathlessness, wheezing and cough. The severity and frequency of asthma symptoms vary from person to person. Symptoms may be infrequent or occur on some days or be present all the time. Asthma attacks are precipitated by a cold or the flu. In some people may become worse with physical activity and at night.

WHAT ARE THE SYMPTOMS AND SIGNS OF BRONCHIAL ASTHMA?

Asthma symptoms and signs include:

- shortness of breath
- tightness of chest
- wheezing sound when exhaling
- coughing
- rhonchi in the lungs on auscultation

HOW IS BRONCHIAL ASTHMA DIAGNOSED?

The diagnosis of asthma can be made based on the history and during physical exam if the above symptoms and signs are present. For confirmation, lung function tests can be done to measure the amount of air moving in and out of air passages with breathing. These tests include:

- **Spirometry.** This test estimates the narrowing of the airways by checking how fast and how much air can be exhaled after a deep breath.
- **Peak flow rate.** A peak flow meter is a simple device that measures how forcefully air can be exhaled after a deep breath (see Box 3.12 on page 57 and Table 3.10 on page 64)

Lung function tests often are done before and after taking a bronchodilator such as salbutamol. In people with asthma lung function improves with use of a bronchodilator.

WHAT CAN BE DONE TO PREVENT BRONCHIAL ASTHMA?

Asthma can prevented by avoiding the triggers – stimuli that irritate and inflame the airways. Each patient must be encouraged to identify the triggers that precipitate their asthma.

WHAT ARE THE COMPLICATIONS OF BRONCHIAL ASTHMA?

If inadequately controlled asthma can have an adverse impact on the quality of life causing fatigue, underperformance or absence from work and inability to exercise. Frequent and severe exacerbation may require repeated hospital admission.

People with severe asthma can develop life threatening respiratory complications including:

- pneumonia
- a collapse of part or all of the lung
- respiratory failure
- status asthmaticus (severe asthma attacks that do not respond to treatment)

HOW IS BRONCHIAL ASTHMA TREATED?

Asthma can be controlled with appropriate management. Short-term bronchodilators like salbutamol are used to relieve symptoms. People with persistent symptoms require daily medications such as inhaled steroids to control the underlying inflammation and prevent symptoms and exacerbations.

WHAT CAN BE DONE FOR BRONCHIAL ASTHMA IN HUMANITARIAN SETTINGS?

In humanitarian settings, people with asthma can present in the following ways:

- established diagnosis of asthma
- exacerbation of asthma
- status asthmaticus
- a complication of asthma
- detection at routine medical examination

People with asthma may experience worse symptoms due to the stressful nature of humanitarian settings. Asthma may become exacerbated in camps and among displaced people who are cooking indoors using wood/coal without ventilation

Further, in such settings spirometry and peak air flow measurement may not be available. In this case diagnosing bronchial asthma should be made based on the history and physical examination outlined above.

Effective treatment is available to prevent such exacerbations and also to manage them (see Flowcharts 3.14 on page 60 and 3.15 on page 68). Steps must also be taken to ensure that people with asthma have access to their medications and that they adhere to treatment.

2.5 CHRONIC OBSTRUCTIVE PULMONARY DISEASE

WHAT IS CHRONIC OBSTRUCTIVE PULMONARY DISEASE (COPD)?

Chronic obstructive pulmonary disease (COPD) is the name for a group of lung conditions – emphysema (damage to the air sacs in the lungs) and chronic bronchitis – long-term inflammation of the airways – that cause breathing difficulties. COPD mainly affects middle-aged or older adults who smoke.

WHAT CAUSES COPD?

COPD is usually associated with long-term exposure to harmful substances including:

- tobacco smoke; the most common cause of COPD
- dust and chemicals at work (coal dust, cadmium dust, grain and flour dust, silica dust, welding fumes, isocyanates)
- indoor and outdoor air pollution

HOW DOES COPD PRESENT?

COPD develops slowly and makes breathing increasingly difficult over many years. Most people with COPD notice the symptoms when they reach around 50 years of age. Symptoms often get gradually worse over time and may make daily activities increasingly difficult. Exacerbations may be associated with cold weather, the common cold and the flu.

WHAT ARE THE SYMPTOMS AND SIGNS OF COPD?

The main symptoms and signs of COPD are:

- increasing breathlessness
- a persistent cough with phlegm
- frequent chest infections
- persistent wheezing
- rhonchi in lungs
- swelling of feet (late feature)
- The breathing problems of COPD tend to get gradually worse over time and limit normal activities, although treatment can help keep the condition under control.

HOW IS COPD DIAGNOSED?

Probable diagnosis of COPD is made based on the history and physical examination, if the above symptoms and signs are present. For confirmation of diagnosis, spirometry is required.

Spirometry: The spirometer takes two measurements – the volume of air exhaled out in one second and the total amount of exhaled air. The measurements are done before and after the inhalation of a bronchodilator. In COPD the airway obstruction is not fully reversed with a bronchodilator. Chest-Xray, electrocardiogram, and blood tests are done to exclude other conditions.

WHAT CAN BE DONE TO PREVENT COPD?

Stopping tobacco smoking is the most effective way to prevent COPD. Although any damage done to the lungs and airways can't be reversed, giving up smoking can help prevent further damage.

WHAT ARE THE COMPLICATIONS OF COPD?

COPD progresses slowly over several years, but complications may develop at any time. These complications can even be life-threatening and include:

- pneumonia
- heart failure
- respiratory failure
- acute respiratory distress syndrome

HOW IS COPD TREATED?

Stopping tobacco use is the most important treatment modality. Drug treatment including bronchodilators, steroids and mucolytics can alleviate symptoms and slow the progression of COPD.

Specialized programmes of exercise and education (pulmonary rehabilitation) and rarely, lung transplants are offered in tertiary care centers.

WHAT CAN BE DONE FOR COPD IN HUMANITARIAN SETTINGS?

In humanitarian settings, people with COPD can present in the following ways:

- **established** diagnosis of COPD
- **exacerbation** of COPD
- **a complication** of COPD such as right heart failure
- **detection at routine medical examination**

People with COPD may experience worsening of symptoms due to the stressful nature of humanitarian settings. Exacerbations may be common in camp settings and among displaced people who are cooking indoors using wood/coal without ventilation.

Effective treatment is available to prevent such exacerbations and also to manage them (see Flowchart 3.16 on page 69). Steps need to be taken to ensure that people with COPD are provided treatment if they start having any of the following symptoms:

- increased shortness of breath
- change in the amount, color, or consistency of mucus
- fever
- increased coughing
- new or worsening swelling in the feet, legs, or ankles
- chest pain
- bluish nails or lips
- confusion

2.6 EPILEPSY

WHAT IS EPILEPSY?

Epilepsy is a disease of the brain characterized by recurrent seizures (fits). Seizures are brief episodes of involuntary movement that may involve a part of the body (partial) or the entire body (generalized). They are sometimes accompanied by loss of consciousness and control of bowel or bladder function. Epilepsy can vary from the briefest lapses of attention to prolonged convulsions. Seizures can also vary in frequency, from less than one per year to several per day..

WHAT CAUSES EPILEPSY?

Seizure are a result of excessive electrical discharges in a group of brain cells. The most common type of epilepsy, is called idiopathic epilepsy and has no identifiable cause.

Epilepsy with a known cause is called secondary epilepsy and the causes include:

- brain damage from trauma during birth
- brain tumor
- congenital abnormalities
- brain malformations
- a severe head injury
- a stroke that restricts the amount of oxygen to the brain
- an infection of the brain e.g. meningitis, encephalitis and
- genetic conditions

WHAT ARE THE SYMPTOMS AND SIGNS OF EPILEPSY?

Most people with epilepsy have the same type of seizure every time. Symptoms and signs including:

- temporary confusion
- involuntary jerking of a body part, such as an arm or leg
- involuntary stiffness and jerking of the whole body
- loss of consciousness or awareness
- altered emotions or change in the way things look, smell, taste or sound

The term status epilepticus is used when there is continuous seizure activity lasting more than five minutes or if there are frequent recurrent seizures without regaining full consciousness in between them. People with status epilepticus have an increased risk of permanent brain damage and death.

HOW IS EPILEPSY DIAGNOSED?

Probable diagnosis of epilepsy can be made based on the history and an electroencephalogram confirms the diagnosis. Other tests such as a skull Xray, computerized tomography of the brain may have to be done to exclude secondary causes.

WHAT CAN BE DONE TO PREVENT EPILEPSY?

Secondary epilepsy may be prevented by:

- preventing head injury
- adequate perinatal care to reduce birth injury
- preventing infections of the brain including parasitic infections

WHAT ARE THE COMPLICATIONS OF EPILEPSY?

If uncontrolled, repeated seizures can cause brain damage and death. Having a seizure in certain circumstances can be particularly dangerous. For example, people with epilepsy are at risk of drowning while swimming or increased risk of accidents while driving due to loss of awareness or control.

HOW IS EPILEPSY TREATED?

Epilepsy is treated with antiepileptic drugs such as carbamazepine and phenytoin. The majority of antiepileptic drugs are taken orally and are usually continued for many years. If an underlying correctable brain condition is causing the seizures, surgery can sometimes be done.

HOW DOES EPILEPSY PRESENT IN HUMANITARIAN SETTINGS?

In humanitarian settings, people with epilepsy can present in the following ways:

- established diagnosis of epilepsy
- fits due to discontinuation of medications
- status epilepticus

Continuity of treatment is critical for people with epilepsy. Yet in crisis settings, discontinuation of treatment is more common leading to increased rates of seizures.

Effective treatment is available in humanitarian context (see Flowcharts 3.17 on page 71 and 3.18 on page 72). Steps need to be taken to ensure continuity of care for people with epilepsy by providing access to essential medications and by promoting treatment adherence – this may include allowing a relative to collect medications if the patient is unable to travel to the clinic (see self-care guide on living with epilepsy on page 100).

PEN-H PART III A

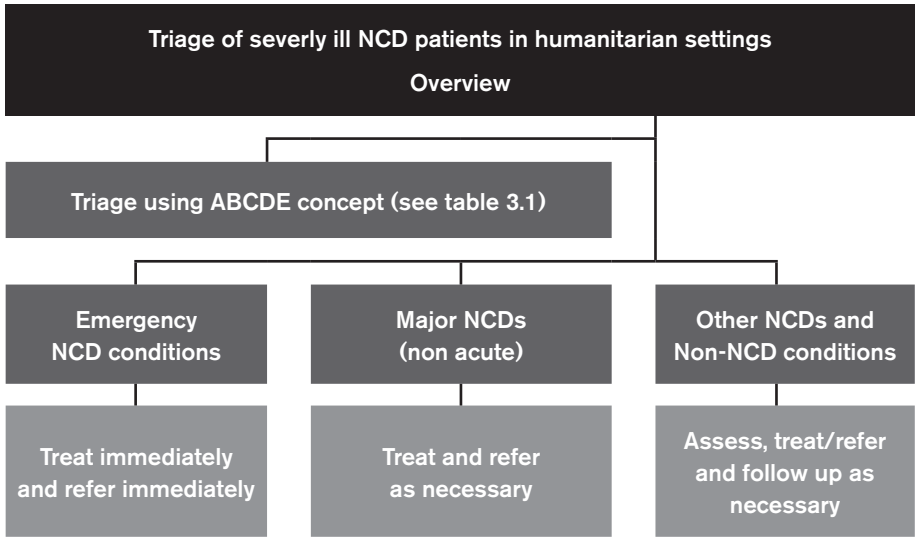
TRIAGE OF SEVERELY ILL NCD PATIENTS IN HUMANITARIAN SETTINGS

NCD CARE IN HUMANITARIAN SETTINGS; IMPORTANT CONSIDERATIONS

CONTENTS

TRIAGE OF SEVERELY ILL NCD PATIENTS IN HUMANITARIAN SETTINGS

Complications and deaths related to NCDs, may be more prevalent during the initial response phase of a crisis, especially during the first week. During this phase the management of NCDs should focus on treatment of life-threatening conditions. Many NCDs related complications can be prevented if very sick people are identified and treated through triage – the sorting of patients into priority groups according to their need and the resources available. Triage is done to improve patient safety. In humanitarian settings, extensive and time-consuming triage procedures can be counterproductive and may put a patient's safety at risk by diverting resources from activities that could directly improve health outcomes.



Patients with NCDs may present with an NCD-related emergency, an NCD-related condition that is not an emergency, or an acute condition that is not NCD-related but is nonetheless life-threatening (e.g. sepsis). The distinction between these possibilities will influence how the condition is managed. Triage must be able to detect severely ill NCD patients with 'emergency conditions' which are life – threatening and require immediate treatment and referral. If they are missed or detected late, they may not respond to treatment. There is no urgency to immediately treat non acute major NCDs or other NCD conditions such as osteoarthritis. In order to save lives, these conditions may need to be temporarily deprioritized particularly in the initial acute phase of the emergency response.

They can be integrated later when the emergency response enters a more organized, stable phase. It is not feasible to detect and treat all emergency NCD conditions in humanitarian settings e.g. dissecting aortic aneurysm.

EXAMPLES OF EMERGENCY NCD CONDITIONS		
1	Acute coronary syndrome	Flowchart 3.5
2	Acute heart failure	Flowchart 3.6
3	Hypertensive emergency	Flowchart 3.10
4	Stroke	Flowchart 3.7
5	Diabetic ketoacidosis	Flowchart 3.13
6	Acute severe asthma	Flowchart 3.15
7	Severe exacerbation of COPD	Flowchart 3.16
8	Status epilepticus	Flowchart 3.18

EXAMPLES OF MAJOR NCDS		
1	Coronary heart disease	Flowchart 3.3
2	Cerebrovascular diseaese	Flowchart 3.4
3	High cardiovascular risk	Flowchart 3.8
4	Hypertensive urgency	Flowchart 3.10
5	Diabetes (Type 1)	Flowchart 3.12
6	Diabetes (Type 2)	Flowchart 3.11
7	Acute asthma/COPD	Flowchart 3.14 & 3.16
8	Epilepsy	Flowchart 3.17
9	Renal disease	Not included in PEN-H
10	Cancer	Not included in PEN-H

The main objective of triage is therefore to detect a handful (about 8) of most treatable emergency NCD conditions. It involves first taking a brief history of key symptoms typical of these emergencies (Step 1) and then looking for the physical signs listed below (Step 2 and Table 3.1). During triage of severely ill NCD patients, main clinical features that should be looked for can be easily remembered as ABCDE (**A**irway – **B**reathing – **C**irculation/**C**hest pain/**C**onsciousness/**C**onvulsion – **D**ehydration/**D**isability and **E**xposure (see table 3.1). Table 3.1 lists only the common NCD emergencies.

HOW TO TRIAGE NCD PATIENTS (USING ABCDE APPROACH)

STEP 1		Brief history of present problem from patient or family
		Chest pain? Breathlessness? Fever
		Past history of NCD (e.g. diabetes, hypertension)
STEP 2	**A**	**A**irway – patent? noisy breathing? breathing difficulty? secretions?
	B	**B**reathing – distress? respiratory rate, chest movements, auscultate lungs
	C	**C**onsciousness – alert, voice responsive, pain responsive, unresponsive
		Circulation – capillary refill, pallor, cyanosis, pulse, blood pressure, auscultate heart
		Convulsions – tongue biting, tonic/clonic movements
	D	**D**isability – weakness of face, arms, legs , paralysis
		Dehydration – dry skin, dry tongue
	E	**E**xposure – body temperature
		Normal adult range: • Respiratory rate: 12-20 per minute • Capillary refill time: less than 2 seconds • Pulse/heart rate: 60-100/minute • Blood pressure: systolic blood pressure 100-140 mm Hg • Pulse oximetry: 97%-100% (if available)
STEP 3		Make a diagnosis based on findings of examination (Step 2) and other clinical features listed in Table 3.1 and take immediate action

Main features of common emergency NCD conditions that are life threatening but amenable to prompt treatment are listed in table 3.1 below. If, for example, a patient gives a history of severe chest pain and on examination is breathless he/she is likely to have an acute coronary syndrome. Similarly, if a patient is breathless and has cyanosis, acute heart failure or acute severe asthma/COPD should be considered. If a person with a history of diabetes has impaired consciousness and fever, diabetic ketoacidosis with sepsis need to be excluded. In humanitarian settings these common emergency NCD conditions are often detected too late, because health workers are not trained to detect them proactively. Emergency conditions need immediate treatment within minutes.

Conditions listed as major NCD on the other hand, must also be treated but this can be done after attending to emergencies.

NCD CARE IN HUMANITARIAN SETTINGS: IMPORTANT CONSIDERATIONS

The clinical protocols in this package have been simplified as much as possible while respecting the need to follow evidence based recommendations. Nevertheless, in humanitarian settings it may not be possible to deliver NCD care exactly as outlined in these protocols. The following are important considerations in implementation.

- Saving lives should be the top priority. For example, triaging severely ill NCD patients, can save lives by diagnosing emergency NCD conditions and providing immediate treatment within minutes.
- Referral may be difficult or delayed. In this case interim measures can be taken to save lives, as outlined in Flowchart 3.2 on page 37.
- Every effort should be taken to use available resources, as efficiently as possible. For example diagnosing hypertension should be done using the proper technique and after repeated measurements to avoid labelling normal people as hypertensive and overloading service delivery (see Flowchart 3.9 on hypertension on page 46).
- Available resources need to be specifically targeted at those who are likely to benefit most. For example, by using cardiovascular risk assessment (see Flowchart 3.8 on page 45), to identify those most vulnerable to develop heart attacks and stroke.
- Protocols in this package list core investigations required for the diagnosis and management of common NCD conditions. If these investigations are not available, diagnosis must be made based on history and clinical features alone.
- Medicines specified in the protocols may not always be available. In this situation, until the medicine supplies are restored, another medicine in the same class may be temporarily substituted. For example bisoprolol, propranolol, metoprolol, atenolol and carvedilol as betablockers; Pravastatin, Fluvastatin, atorvastatin and lovastatin as statins etc.

TABLE 3.1
Main clinical features which help to recognize acute NCD conditions that are life threatening but amenable to prompt treatment

CONDITION	MAIN PRESENTING FEATURES		MAIN PHYSICAL SIGNS	
ACUTE CORONARY SYNDROME (see flowchart 3.5)	Severe chest pain May have sweating, and/or nausea		Blood pressure: normal, low or high Pulse: tachycardia	Heart rhythm: regular or irregular
ACUTE HEART FAILURE (see flowchart 3.6)	Breathlessness May have coughing and wheezing Difficulty in lying flat		May have cyanosis and bilateral pitting odema of feet Blood pressure: normal, low or high Jugular venous pressure may be raised Pulse: tachycardia	Heart rhythm: triple rhythm or irregular May have an enlarged heart and/or tender enlarged liver Bilateral basal crepitations
HYPERTENSIVE EMERGENCY (see flowchart 3.10)	Severe headache Blurred vision Chest pain	Nausea and vomiting Shortness of breath Seizures	Altered state of consciousness Blood pressure high	
STROKE (see flowchart 3.7)	Difficulty in speech Weakness of one side of body		Altered state of consciousness Difficulty with speech	Weakness or paralysis of limbs If unconscious, may have secretions obstructing airway
DIABETIC KETOACIDOSIS (see flowchart 3.13)	May give history of diabetes Rapid weight loss Excessive urination	Thirst Abdominal pain	Altered mental status heavy labored breathing Fruity breath odor (due to exhaled acetone)	Dry skin and tongue, decreased skin turgor Pulse: tachycardia Blood pressure: may be low
HYPOGLYCEMIA (see flowchart 3.7)	Sweating Hunger Palpitations Confusion	Dizziness Unconsciousness History of diabetes and on insulin or sulfonylurea	Altered mental status or unconscious Tremors May develop seizures	
ACUTE SEVERE ASTHMA OR COPD (see flowcharts 3.15)	Wheezing and cough History of asthma or COPD		May have cyanosis Mental status maybe altered Temperature high if secondary infection	Inability to talk in complete sentences, dyspnoea Bilateral rhonchi in lungs (if very severe silent chest)
STATUS EPILEPTICUS (see flowchart 3.18)	Fits May give history of epilepsy		Unconscious Tonic clonic movements of limbs	May have frothing at mouth and urination May have airway secretions
SHOCK	Dizziness Sweating Confusion		Altered mental status Pale and cool skin, capillary refill > 3secs	Pulse: tachycardia Blood pressure: low Temperature high if shock is due to septicemia

PEN-H PART III B

CLINICAL FLOWCHARTS

FOR MEDICAL OFFICERS, CLINICAL OFFICERS, NURSE PRACTITIONERS AND NURSES

CONTENTS

CARDIOVASCULAR DISEASE

PREVENTION OF HEART ATTACKS AND STROKES

WHO IS AT RISK?

There are two categories of individuals who are more vulnerable to develop heart attacks and strokes than others including:

I. People with established cardiovascular disease

II. People with high cardiovascular risk

I. PEOPLE WITH ESTABLISHED CARDIOVASCULAR DISEASE

People with established cardiovascular disease are at very high risk of developing heart attacks and strokes. Individuals in this category include those with CHD (previous myocardial infarction or ischemic heart disease or those who have had coronary revascularization) or CeVD (previous stroke or transient ischemic attacks or after carotid endarterectomy).

Prevention of heart attacks and strokes in people with established CHD or CeVD is known as secondary prevention. (see Flowchart 3.1 on page 35)

II. PEOPLE WITH HIGH CARDIOVASCULAR RISK

These are people with one or more cardiovascular risk factors such as hypertension, diabetes, hyperlipidemia, tobacco use, harmful use of alcohol, physical inactivity, overweight and family history of premature CVD.

Prevention of first heart attacks and strokes in people with high cardiovascular risk is known as primary prevention. (see Flowchart 3.8 on page 45).

FLOWCHART 3.1

PREVENTION OF HEART ATTACKS AND STROKES IN PEOPLE WITH ESTABLISHED CVD

STEP 1 RECOGNIZE	Diagnosis is made based on the history given by the patient and/or a family member. A past history of any of the following should be sought › Hospitalization for a heart attack or a stroke and follow up treatment › Treatment for angina pectoris/transient cerebral ischemic attack › Coronary artery bypass grafting/percutaneous coronary interventions/ stenting/carotid artery surgery	› History of shortness of breath, chest pain on exertion and/or using sublingual nitrate tablets › History of hypertension and/or diabetes › Diagnosis cards, electrocardiograms may be available to verify the diagnosis and treatment
STEP 2 EXAMINE	› Measure blood pressure › Pitting oedema of ankles	› Auscultate heart (rate, rhythm, murmurs) and lungs (crackles) › Check blood glucose
STEP 3 TREAT	Hospital discharge cards and diagnosis cards, if available, can provide information on routine medications. These, medications can be continued if people have access to them. For others, with an established diagnosis of CHD or CeVD offer drug treatment. Drug treatment CHD (see Flowchart 3.3 on page 39) Drug treatment CeVD (see Flowchart 3.4 on page 40)	**Targets of treatment:** › Adjust antihypertensive drugs as tolerated to achieve a clinic systolic blood pressure below 130 mmHg (see table 3.2 on page 37). › For people with diabetes control blood glucose (see Flowchart 3.11 on page 52, 3.12 on page 56)
STEP 4 REFER	Refer the following categories of people with CHD and/or CeVD for further investigation and advanced care: › Uncontrolled chest pain or severe chest pain suggestive of a heart attack › Symptoms of new TIA or stroke › Palpitations, worsening of shortness of breath and swelling of feet due to heart failure › Hypertensive urgency and emergency If referral is not feasible see Flowchart 3.2 on page 37 for interim short-term measures	
PRACTICE POINT	› If a patient carries a drug supply advise to continue same medications › If available, refill the regular medications of the patient	› Depending on availability, bisoprolol, metoprolol, atenolol or carvedilol can be used as betablockers › Depending on availability simvastatin, pravastatin, fluvastatin, atorvastatin or lovastatin can be used as statins

TABLE 3.2
Medicines which are used for primary and secondary prevention of heart attacks or strokes

DRUG	MAIN EFFECT/S	DAILY MAINTENANCE DOSE
ACETYLSALICYLIC ACID	antiplatelet, given once a day	100 mg
HYDROCHLOROTHIAZIDE	thiazide, lowers blood pressure, given once a day	12.5 mg - 50 mg
ENALAPRIL	Angiotensin converting enzyme inhibitor, lowers blood pressure, given once a day	2.5 mg - 5 mg
LISINOPRIL	angiotensin converting enzyme inhibitor, lowers blood pressure, given once a day	10 mg - 40 mg
RAMIPRIL	angiotensin converting enzyme inhibitor, lowers blood pressure, given in one or two equally divided doses	2.5 mg - 20 mg
LOSARTAN	angiotensin receptor blocker, lowers blood pressure, given once a day	25 mg -100 mg
AMLODIPINE	calcium channel blocker, lowers blood pressure, given once a day	5 mg - 10 mg
NIFEDIPINE (Extended Release)	calcium channel blocker, lowers blood pressure, given once a day	30 mg – 60 mg
BISOPROLOL	betablocker, lowers heart rate and blood pressure, given once a day	1.25 mg - 20 mg
METOPROLOL (Extended Release)	betablocker, lowers heart rate and blood pressure, given once a day	25 mg - 300 mg
ATENOLOL	betablocker, lowers heart rate and blood pressure, given once a day	50 mg -100 mg
CARVEDILOL (Extended Release)	betablocker, lowers heart rate and blood pressure, given once a day	20 mg - 80 mg
SIMVASTATIN	statin, lowers cholesterol, given once a day	5 mg - 40 mg
LOVASTATIN (Extended Release)	statin, lowers cholesterol, given once a day	10 mg - 60 mg
PRAVASTATIN	statin, lowers cholesterol, given once a day	10 mg - 80 mg
FLUVASTATIN (Extended Release)	statin, lowers cholesterol, given once a day	20 mg - 80 mg
ATORVASTATIN	statin, lowers cholesterol, given once a day	10 mg - 80mg

FLOWCHART 3.2

INTERIM MEASURES WHEN REFERRAL OF ACUTELY ILL PATIENTS WITH CVD IS NOT FEASIBLE

Referral may not be feasible particularly in the acute response phase of humanitarian crises.

When referral of acutely ill patients (see Step 4 of Flowchart 3.1 on page 35), is not feasible, the following interim actions could be taken as short-term measures:

- If breathless, place patient in semi-seated position, if sudden drop in blood pressure raise foot-end of bed
- Insert intravenous line
- Give oxygen by mask 6-10 liters/minute
- Monitor level of consciousness, heart rate, blood pressure, respiratory rate temperature, urine output and SpO2
- Prevent aspiration if semiconscious or unconscious, by placing patient in recovery position (see figure below)
- If a patient is unable to take fluids by mouth give IV fluids. Approximate adult requirements are
  - water 25–30 ml/kg/day
  - potassium, sodium and chloride 1mmol/kg/day and
  - glucose 50–100 g/day to limit starvation ketosis
- For routine maintenance alone, for a 70 Kg patient prescribe approximately 2- 2.5 liters for 24 hours using a combination of the following IV solutions:
  - sodium chloride 0.9%
  - sodium chloride 0.18% in glucose 4%
  - glucose 5%
  - sodium chloride 0.18% in glucose 4% + potassium (2G/27mmol, 0.2% concentration)

Until referral links are established provide care given in respective flowcharts as follows:

- Uncontrolled chest pain or severe chest pain suggestive of a heart attack (see Flowchart 3.5 on page 41)
- Symptoms of new TIA or stroke (see Flowchart 3.7 on page 44)
- Palpitations, worsening shortness of breath and swelling of feet due to heart failure (see Flowchart 3.6 on page 43)
- Hypertensive urgency and emergency (see Flowchart 3.10 on page 51)

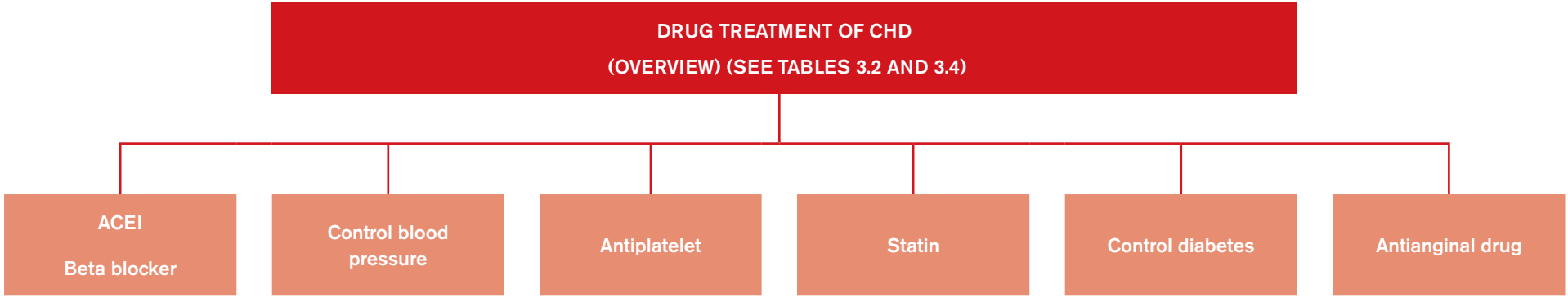
FLOWCHART 3.2

INTERIM MEASURES WHEN REFERRAL OF ACUTELY ILL PATIENTS WITH CVD IS NOT FEASIBLE (continuation)

RECOVERY POSITION

FLOWCHART 3.3

DRUG TREATMENT OF ESTABLISHED CHD



ANGIOTENSIN CONVERTING ENZYME INHIBITOR (ACEI): Enalapril or any other ACEI that the patient is using. If intolerant to ACEI offer an Angiotensin Receptor Blocker.

BETA BLOCKER: Bisoprolol (or metoprolol or carvedilol) for at least 12 months, after a heart attack.

CONTROL BLOOD PRESSURE: Blood pressure need to be controlled with ACEI and/or betablocker if blood pressure level is above 140/90 mmHg.

ANTIPLATELET DRUG: Acetylsalicylic acid daily in the absence of contraindications (e.g. allergy to acetylsalicylic acid, peptic ulcer).

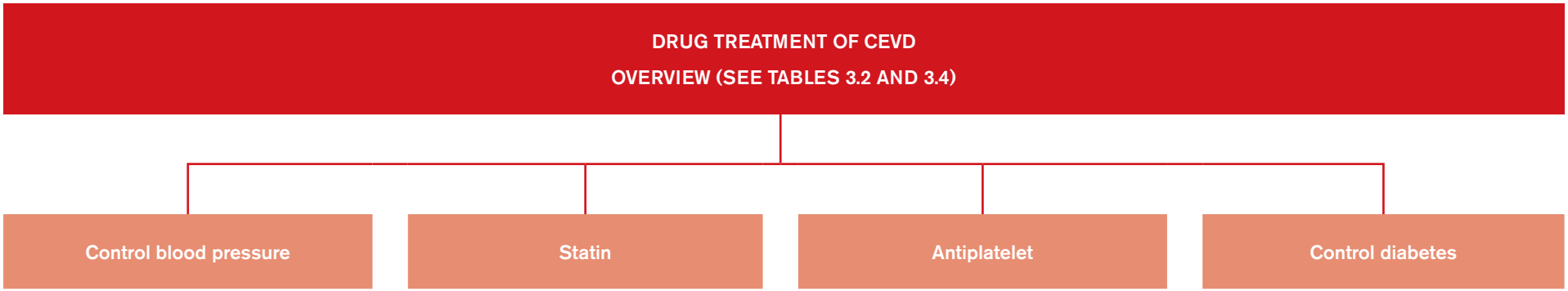
STATIN: Simvastatin or atorvastatin. Monitoring of blood cholesterol levels is not essential.

CONTROL DIABETES: If fasting blood glucose >7 mmol/l despite a diabetic diet offer metformin and/or insulin as appropriate.

ANTIANGINAL DRUG FOR PREVENTION AND TREATMENT OF EPISODES OF CHEST PAIN: For people with stable angina offer a short-acting nitrate. The short-acting nitrate (glyceryl nitrate) is to be used immediately before exertion. Side effects such as flushing, headache and light-headedness may occur. Advise to sit down if feeling light-headed. The dose can be repeated after five minutes if chest pain persists. To prevent recurrent attacks of angina, the dosage of drugs (beta blocker and/or calcium channel blocker) need to be titrated against the person's symptoms up to the maximum tolerable dosage.

FLOWCHART 3.4

DRUG TREATMENT OF ESTABLISHED CEVD



CONTROL BLOOD PRESSURE if above 140/90 mm Hg:

- For people aged 55 or over, or of African or Caribbean origin at any age, amlodipine or hydrochlorothiazide. If target blood pressure is not achieved, add enalapril or angiotensin receptor blocker.
- For people not of African or Caribbean origin and younger than 55 years, give enalapril or an angiotensin receptor blocker.

STATIN: Simvastatin or atorvastatin (or another statin) unless contraindicated.

ANTIPLATELET DRUG: Acetylsalicylic acid (75 mg-100 mg daily) in the absence of contraindications (e.g. allergy to acetylsalicylic acid, peptic ulcer). If already on clopidogrel 75 mg daily or modified-release dipyridamole 200 mg twice daily, continue same if these medicines are available.

CONTROL DIABETES: If fasting blood glucose >7 mmol/l despite diet control, control with metformin and/or insulin as appropriate (see Flowcharts 3.10 on page 51, 3.11 on page 52)

PRACTICE POINT

CeVD and Atrial Fibrillation in humanitarian settings

For patients with a history of TIA or stroke who are in atrial fibrillation, long-term anticoagulation is required to prevent strokes.

In humanitarian settings however, it is usually not feasible to safely monitor anticoagulation. In such circumstances, or if oral anticoagulants are not available, consider treatment with acetylsalicylic acid.

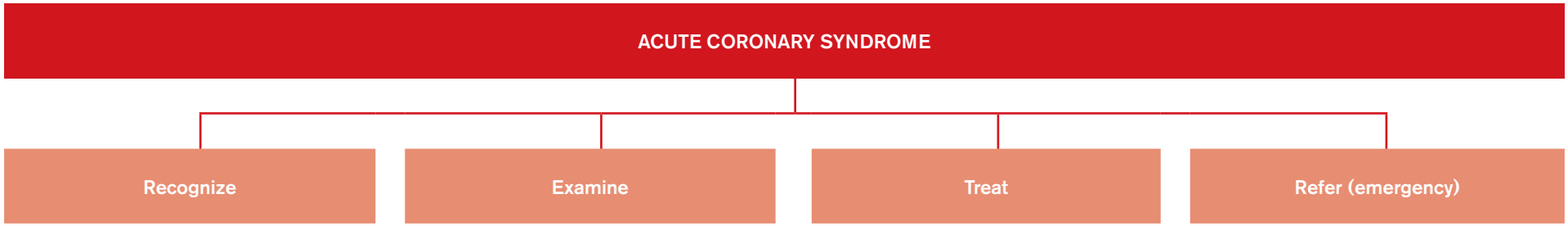
PRACTICE POINT

Behavioral advice for CHD and CeVD

Behavioral risk factors such as smoking, harmful alcohol use, physical inactivity and unhealthy diet contribute to cardiovascular risk. Their modification provides an important mechanism for influencing recurrent heart attacks and strokes (see Flowcharts 3.19 on page 75 and 3.20 on page 79).

In humanitarian settings strict adherence to healthy behaviors may be challenging, Despite this, patients with coronary heart disease or cerebrovascular disease should be offered advice and counselling on healthy behaviors (see Flowcharts 3.19 on page 75 and 3.20 on page 79).

FLOWCHART 3.5
ACUTE CORONARY SYNDROME



STEP 1 RECOGNIZE	• Both myocardial infarction and unstable angina (Acute Coronary Syndrome) present as chest pain • Differentiate from stable angina and other causes of chest pain (see Table 3.3 on page 42) • Retrosternal chest pain, nausea, vomiting, sweating, breathlessness and/or fainting are suggestive of myocardial infarction • Inquire about past history of chest pain, cardiovascular risk factors and hospitalisation
STEP 2 EXAMINE	• Check blood pressure, auscultate heart rate and rhythm and lungs • If feasible, take a resting 12-lead ECG. Recording the ECG should not delay transfer to hospital
STEP 3 TREAT	• Glyceryl trinitrate sublingually • Morphine 10 mg by subcutaneous or intramuscular injection every four hours if necessary • Acetylsalicylic acid 300 mg as a single loading dose (if there is no history of allergy to aspirin)
STEP 4 REFER	Transfer to hospital as an emergency for intensive care. If possible insert an IV line before transfer
PRACTICE POINT	If transfer to hospital is delayed provide interim care (see Flowchart 3.2 on page 37) • In addition, alleviate chest pain using morphine 10 mg by subcutaneous or intramuscular injection • If chest pain continues (and if systolic blood pressure is above 120 mm Hg), give isosorbide dinitrate sublingual (5 mg tablet) or glyceryl trinitrate, sublingual (0.5 mg tablet). If necessary repeat in 10-15 minutes up to 2 doses • If severe shortness of breath (features of acute heart failure), give furosemide 40 mg intravenously (see Flowchart 3.6 on page 43).

TABLE 3.3	CHARACTERISTICS OF CHEST PAIN		
FEATURES OF CHEST PAIN	**STABLE ANGINA**	**ACUTE CORONARY SYNDROME (MYOCARDIAL INFARCTION OR UNSTABLE ANGINA)***	**MUSCULOSKELETAL PAIN**
SITE	usually centre of chest (retrosternal)	retrosternal	anywhere in the chest
NATURE	pain feels like tightness, heaviness, constriction	pain can be similar to stable angina, but may be more severe or progressive and is often not related to or provoked by exercise	aching
SEVERITY	discomfort or pain	severe	mild to severe
DURATION	5-10 minutes	lasts more than 15 minutes	variable
RELATION TO EXERTION	onset with exertion goes away with rest	no relation to exertion, present at rest	related to movement of body and limbs
RADIATION	may radiate to arms, neck, jaw, upper abdomen	may radiate to arms, neck, jaw, upper abdomen	usually no radiation
ACCOMPANYING SYMPTOMS		nausea, vomiting or sweating, giddiness ,palpitations (thumping sensation of heart) suggest myocardial infarction	may be worse with movement
OTHER FEATURES	responds to sublingual glyceryl trinitrate	change in the pattern of stable angina and/or worsening of symptoms no response or incomplete response to glyceryl trinitrate	may vary with posture

**Symptoms may be atypical in women, elderly or diabetic patients. Pneumothorax can also cause severe chest pain.*

FLOWCHART 3.6
HEART FAILURE

HEART FAILURE; MANAGEMENT

Recognize | **Examine** | **Treat** | **Refer (urgent)**

STEP 1 RECOGNIZE	History: • Fatigue and breathlessness (on exertion, at rest and/or lying flat) • Ankle swelling	• Angina (if suffering from coronary heart disease) • Past history of heart disease or stroke, hypertension, diabetes
STEP 2 EXAMINE	• Pitting odema of ankles, • Pulse rate and rhythm (may be fast and irregular) • Blood pressure	• Jugular venous pressure (may be raised)/tender palpable liver • Auscultate the heart (rhythm and murmurs) • Auscultate the lungs (crackles)
STEP 3 TREAT	Acute heart failure • Give furosemide IV (slow intravenous injection 20-40 mg. If necessary repeat 20 - 40 mg in 2 hours. (If IV furosemide is not available use oral preparation). • Control hypertension, diabetes and treat other comorbidities • Monitor weight and urine output • Monitor renal function (if feasible)	Chronic heart failure • Give diuretic (If already on a diuretic, consider a higher dose if worsening of symptoms/signs) • Control hypertension, diabetes and treat other comorbidities • Monitor weight and urine output
STEP 4 REFER	Refer for: • Investigation (ECG, plasma natriuretic peptides, echocardiography and others)	• Further assessment/treatment: angiotensin converting enzyme Inhibitor and other treatment as appropriate
PRACTICE POINT	Diuretics for treatment of heart failure: • **Furosemide** – initial dose 40 mg daily in the morning; maintenance dose, 20–40 mg daily; for acute heart failure slow intravenous injection 20-40 mg. If necessary repeat 20 mg in 2 hours. (If IV furosemide is not available use oral preparation).	• **Hydrochlorothiazide** – 25 mg daily in the morning increased to 50 mg if necessary. • **Spironolactone** – continue if the patient is already on it. (It is included in the Interagency Emergency Health Kit)

FLOWCHART 3.7

TRANSIENT ISCHEMIC ATTACK (TIA) AND STROKE

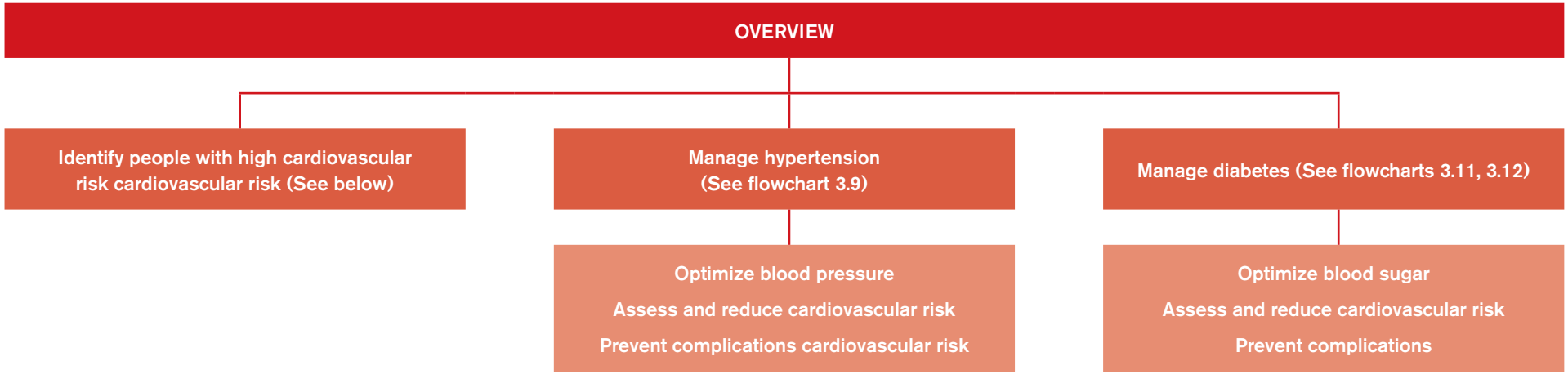
TIA OR STROKE

Recognize	Examine	Treat	Refer (Emergency)

STEP 1 RECOGNIZE	May present with • Sudden onset of weakness or numbness of one side of the body, or of a limb, • Sudden difficulty of speaking or understanding • Sudden disturbance of vision • Sudden severe, unusual headache	• Sudden dizziness or unsteadiness of gait • Impaired consciousness • Inquire about a history of diabetes, hypertension, alcohol/drug addiction • Rule out head injury, epilepsy, eclampsia, anaphylaxis, overdose, snake bite
STEP 2 EXAMINE	• Level of consciouness • Temperature and neck stiffness (to exclude meningitis)	• Blood pressure (to exclude hypertensive emergency; see Flowchart 3.10 on page 51) • Bood glucose (to exclude hypoglycaemia or diabetic ketoacidosis; see Flowchart 3.13 on page 58)
STEP 3 TREAT/REFER	If unconscious • Place in lateral recovery position (see Flowchart 3.2 on page 37) • Maintain airway (insert airway and suck out secretions) If blood glucose is <= 2.8 mmol/l treat hypoglycemia • If conscious and able to drink give 20-30 glucose mixed in water or one glass of fruit juice, honey or a sugar drink. • If unconscious/unable to drink give glucagon 1mg intramuscularly, if no response in 10 minutes give intravenous glucose. • 50 ml of glucose solution, 20% or 25 ml of glucose solution IV, 50% can be given into a large vein through a large gauge needle; care is required since at these concentrations glucose solution is irritant, especially if extravasation occurs.	If the diagnosis is suspected transient ischemic attack (neurological symptoms and signs resolving within 24hours), give acetylsalicylic acid (300 mg), unless contraindicated (e.g. aspirin allergy), urgently refer for specialist assessment and treatment. If the diagnosis is suspected stroke give acetylsalicylic acid (300 mg), unless contraindicated (e.g. aspirin allergy) and transfer to hospital emergently for further assessment and treatment. If there is a delay in referral provide interim care as outlined in Flowchart 3.2 on page 37

FLOWCHART 3.8

PREVENTION OF HEART ATTACKS AND STROKES IN PEOPLE WITH HIGH CARDIOVASCULAR RISK



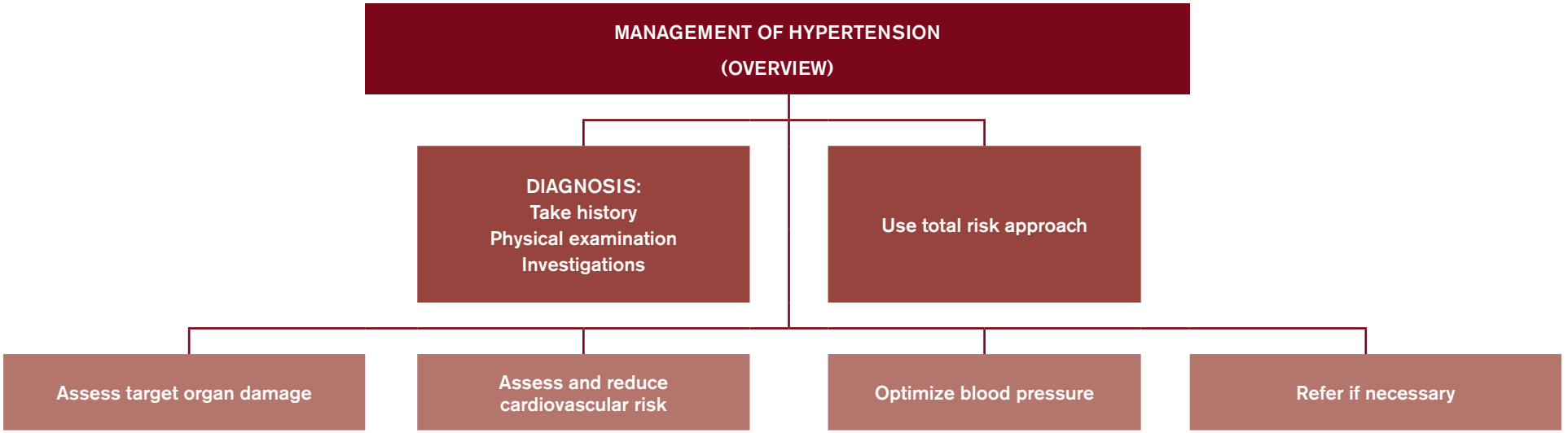
Identify people with high cardiovascular risk

In humanitarian settings, health workers will encounter persons with high cardiovascular risk. People with high cardiovascular risk have one or more of the following:

- Coronary heart disease (see Flowchart 3.3 on page 39)
- Cerebrovascular disease (see Flowchart 3.4 on page 40)
- Cardiovascular risk factors
  - Hypertension
  - Diabetes
  - Raised blood lipids
  - Overweight/obesity
  - Tobacco use, harmful use of alcohol, physical inactivity
  - Chronic kidney disease
  - Family history or premature cardiovascular disease

Risk factors of cardiovascular disease such as hypertension and diabetes tend to cluster together and exert a synergistic effect on cardiovascular risk. They should therefore be managed together using an integrated approach. This is also known as a total risk approach. Total risk can be assessed using risk charts. Risk assessment detects hypertensives with medium to high risk who are more vulnerable to develop heart attacks and strokes. They need drug treatment to prevent the occurrence of such events. Cardiovascular risk assessment also contributes to more efficient management of scarce resources by directing them to hypertensive patients who need them most (e.g. hypertensive with high cardiovascular risk) .

FLOWCHART 3.9
HYPERTENSION



STEP 1 RECOGNIZE	Identify the following categories of people with hypertension: • Previously diagnosed with hypertension (controlled or uncontrolled) with or without documented medical information • Blood pressure raised in a person with symptoms (headache, giddiness) or on casual examination
STEP 2 ASK/EXAMINE	• Ask about tobacco and alcohol use, diabetes, and premature cardiovascular disease in the family • Take history of angina, heart attack, stroke, transient ischemic attacks, heart failure, diabetes, chronic kidney disease (If the history is positive refer Flowchart 3.3 coronary heart disease on page 39, Flowchart 3.4 cerebrovascular disease on page 40 and Flowcharts 3.11 type 2 diabetes on page 52, 3.12 type 1 diabetes on page 56). • Measure resting blood pressure (see below Box 3.3 on page 49) • Examine for any clinical features of cardiac failure (pitting edema, elevated jugular venous pressure, gallop rhythm and basal crepitations)
STEP 3 ASSESS	Basic Investigations (if feasible) • urine analysis • blood glucose (if not feasible urine glucose using test strips) • serum creatinine or blood urea • blood lipids, at least total cholesterol • electrocardiogram Assess target organ damage (see below Box 3.1 on page 48) Assess cardiovascular risk (see below Box 3.2 on page 48)

STEP 4
TREAT

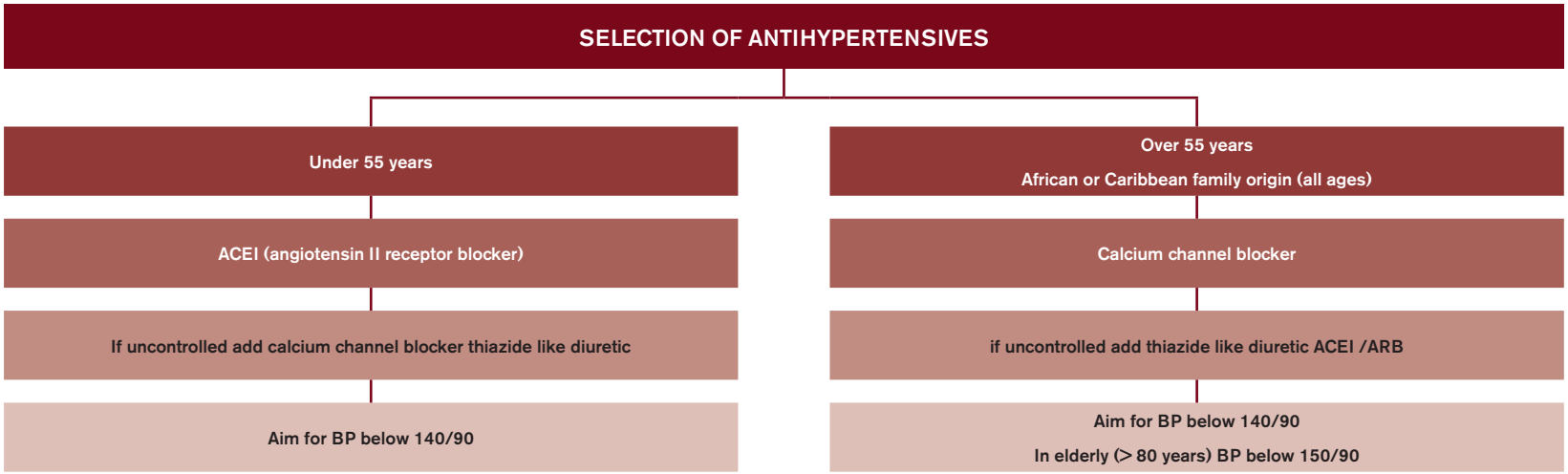
Reduce cardiovascular risk; A statin is recommended for the primary prevention of cardiovascular disease to people who have a 10% or greater 10 year risk of developing CVD. In humanitarian settings where statins may not be freely available at least people with 20% or greater 10 year risk of developing CVD and those who are already on statins should be offered statins.

Counsel to adopt healthy behavior (see Flowcharts 3.19 on page 75 and 3.20 on page 79)

Optimize blood pressure (see tables 3.2 on page 36 and 3.4 on page 50)

- Give antihypertensives immediately if SBP 180 mm Hg and/or DBP 110 mm Hg
- Give antihypertensives if SBP 160 mm Hg and\or DBP 100 mm Hg (confirmed with at least two measurements on separate days)
- Antihypertensives are recommended if SBP 140 mm Hg and\or DBP 90 mm Hg and any of the following:
  - 10 year cardiovascular risk > 20%
  - target organ damage (e.g. retinopathy, left ventricular hypertrophy)
  - kidney disease
  - established cardiovascular disease (see Flowcharts 3.3 on page 39, 3.4 on page 40)
  - diabetes (see Flowchart 3.11 on page 52, 3.12 on page 56)

Select antihypertensive as shown below. See tables 3.2 and 3.4 for list of antihypertensives. (If the medication that the patient has been taking is available, the same medicines can be prescribed).



STEP 5
REFER

Referral criteria

- When feasible, the following should be referred for further assessment and treatment.
- SBP >180 DBP >110 (if referral is not possible treat with available antihypertensives)
- When possible, refer the same day if blood pressure is higher than 180/120 mm Hg with life-threatening symptoms such as new onset confusion, chest pain, signs of heart failure, acute kidney injury or blurred vision (signs of retinal haemorrhage or papilledema)
- Target organ damage (If referral is not possible treat blood pressure with available antihypertensives)
- Suspected secondary hypertension
- Resistant blood pressure (uncontrolled with even three types of antihypertensives)
- If referral is not possible, the above treatment should be continued until referral links are established

BOX 3.1
Assess target organ damage

Target organ damage:

- Left ventricular hypertrophy (ECG)
- Coronary heart disease (history, ECG)
- Cerebrovascular disease (history)
- Kidney disease (urine albumin, serum creatinine)
- Retinopathy (Fundus exam)

Target organ damage manifests as hypertrophy of the left ventricle, coronary heart disease, cerebrovascular disease, kidney disease or retinopathy.

From an electrocardiogram, it is possible to determine left ventricular hypertrophy and ischemic heart disease. Hypertensive retinopathy is diagnosed by the examination of the optic fundi for the presence of hypertensive retinopathy.

The presence of protein in urine indicates kidney damage, but does not distinguish between kidney disease causing (secondary) hypertension and kidney damage due to (essential) hypertension. The test consists of dipping a test strip, which is impregnated with chemicals which react to protein, into a urine sample. After 30–60 seconds (or according to manufacturer's instructions) the strip is read alongside a colour code provided. Urea and creatinine measurements, which reflect kidney function, can help to exclude kidney disease and kidney disease as a secondary cause of hypertension.

BOX 3.2
Assess cardiovascular risk

Before applying a cardiovascular risk chart to estimate the 10 year cardiovascular risk, the following information is necessary (see link below to cardiovascular risk charts)

- presence or absence of diabetes; someone taking insulin or oral hypoglycaemic drugs, or with a fasting plasma glucose concentration above 7.0 mmol/l (126 mg/dl). Urine glucose test may be used to screen for diabetes if blood glucose assay is not feasible. Blood test is necessary for confirmation of diagnosis.
- gender
- smoker or non-smoker; all current smokers and those who quit smoking less than one year ago are considered smokers for assessing cardiovascular risk.
- age
- systolic blood pressure
- total blood cholesterol; if blood cholesterol cannot be measured due to resource limitations, use 5.2 mmol/l as the level of cholesterol.

People with coronary heart disease (see Flowchart 3.3 on page 39), cerebrovascular disease (see Flowchart 3.4 on page 40) and diabetes (see Flowchart 3.11 on page 52, 3.12 on page 56) and kidney disease are at high cardiovascular risk. Note that CVD risk may be higher than indicated by the charts in the presence of the following:

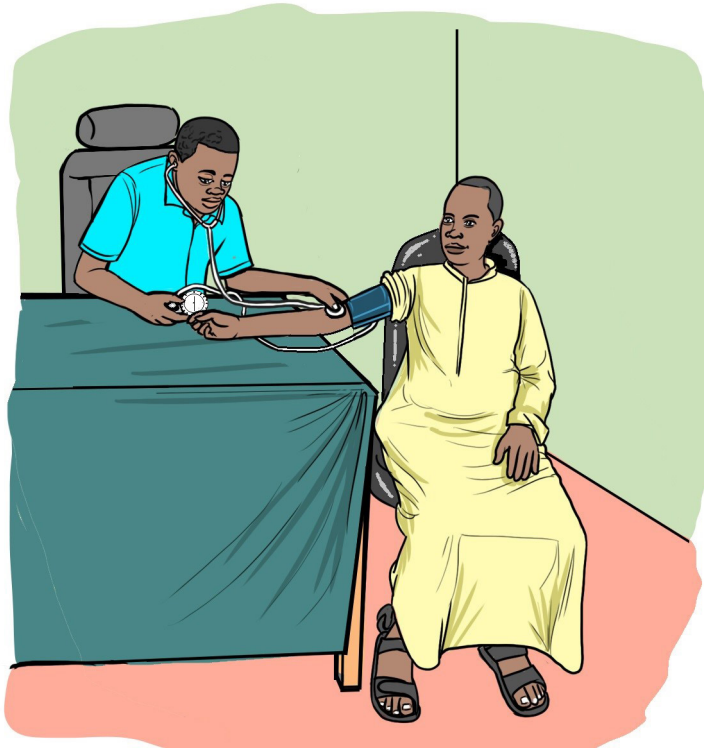
- already on antihypertensive therapy
- obesity (including central obesity)
- family history of premature CHD or stroke in first degree relative (male < 55 years, female < 65 years)

World Health Organization cardiovascular disease risk charts: revised models to estimate risk in 21 global regions Published online: September 2, 2019. The WHO CVD Risk Chart Working Group; The Lancet Global Health https://www.thelancet.com/journals/langlo/article/PIIS2214-109X(19)30318-3/fulltext

BOX 3.3

Use the correct technique for measuring blood pressure

Practice point: Manual blood pressure measurement



Use the correct technique for measuring blood pressure

- Person should sit quietly for at least five minutes.
- Back should be supported by the chair.
- Support the arm at the level of the heart as shown in the figure above.
- The bladder of the cuff should encircle and cover two-third of the length of the arm, with bladder over the brachial artery.
- Inflate cuff to a pressure approximately 30 mm Hg greater than systolic, as estimated from the disappearance of the pulse in the brachial artery by palpation.
- Place stethoscope lightly over the brachial artery.
- Deflate the cuff slowly at the rate of 2-3 mm Hg per heartbeat.
- The systolic pressure is equal to the pressure at which the brachial pulse can first be palpated or to the pressure at which the pulse is first heard by auscultation (Korotkoff phase 1).
- As the cuff is deflated below the systolic pressure, the pulse continues to be heard until there is abrupt muffling (phase 4) followed by the disappearance of sound (phase 5).
- On each visit, take the average of at least two blood pressure readings separated by a few minutes.
- If the first two readings differ by more than 10 mm Hg systolic, or if initial readings are high, allow the person to sit quietly for five minutes then take several readings until consecutive readings do not vary by greater than 10 mm Hg

Follow up of patients with hypertension:

- At the beginning follow up once in two weeks.
- Once blood pressure is controlled those with low cardiovascular risk can be seen once in 3 months.
- Those with moderate/high cardiovascular risk need to be seen more frequently.

TABLE 3.4
Medicines (WHO Essential Medicines List[24]) for treatment of cardiovascular disease

DRUG	DAILY DOSE
Aspirin	300 mg – 325 mg
Hydrochlorothiazide	12.5 mg – 50 mg
Enalapril	2.5 mg – 5 mg
Losartan	25 mg – 100 mg
Amlodipine	5 mg – 10 mg
Bisoprolol*	1.25 mg – 20 mg
Simvastatin**	5 mg – 40 mg
Acetylsalicylic acid	100 mg
Glyceryl trinitrate (sublingual)	0.5 mg – 1 mg
Isosorbide dinitrate	2.5 mg – 5 mg sublingual 20 mg – 240 mg oral
Furosemide	20 mg – 80 mg
Spironolactone	100 mg – 200 mg

*metoprolol, atenolol, carvedilol are also betablockers
**pravastatin, Fluvastatin, atorvastatin and lovastatin are also statins

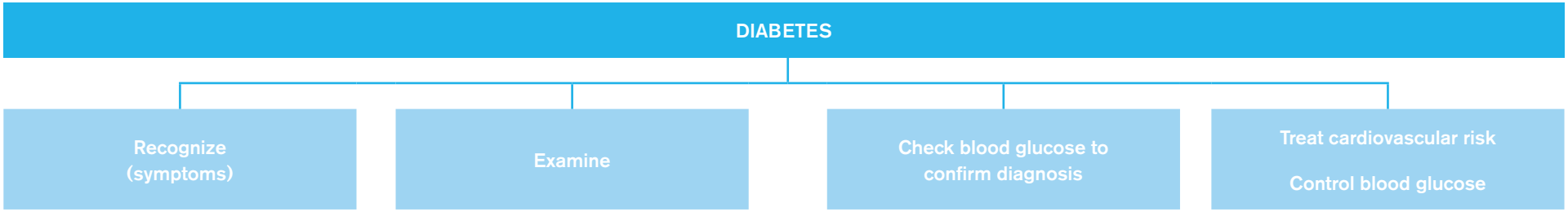
Contraindications to use

- beta blockers; history of asthma, chronic obstructive airways disease, heart block.
- calcium channel blockers; history of cardiac failure
- angiotensin converting enzyme inhibitors; pregnancy

FLOWCHART 3.10
HYPERTENSIVE URGENCY AND EMERGENCY

STEP 1 RECOGNIZE	Patients with hypertensive emergencies have acute target organ damage: e.g. acute heart failure, acute myocardial infarction, unstable angina, acute renal failure, acute stroke, hypertensive encephalopathy, or a hypertensive crisis caused by use of cocaine, amphetamines or by abrupt cessation of sympatholytic drugs.	Look for • chest pain suggestive of myocardial ischemia or infarction • back pain suggestive of aortic dissection • breathlessness suggestive of acute heart failure • seizures, visual disturbances, and altered level of consciousness suggestive of hypertensive encephalopathy • paralysis or speech disturbance suggestive of stroke
STEP 2 DIAGNOSE	Measure resting blood pressure (see Box 3.3 on page 49). **Hypertensive emergency:** SBP > 180 mm Hg or a DBP > 120 mm Hg with the presence of acute target organ damage. **Hypertensive urgency:** SBP > 180 mm Hg or a DBP > 120 mm Hg in an otherwise stable person without evidence of acute target organ damage.	
STEP 3 TREAT	**Hypertensive urgency** Intensify oral antihypertensive treatment to lower blood pressure to 160/100 in 24-48 hours. Avoid over aggressive treatment	**Hypertensive emergency** Hydralazine is included in the interagency emergency health kit for treatment of hypertensive settings. Hydralazine 5 – 10 mg intramuscular injection repeated as necessary every 2 hours or intravenous infusion (initially 200 micrograms/minute; maintenance dose 50 – 150 micrograms/minute). Lower blood pressure by about 20% in one hour and then gradually to 160/100 mm Hg within the next six hours.
STEP 4 REFER	Patients with hypertensive settings require URGENT referral for treatment in an intensive care setting.	
PRACTICE POINT	If referral is delayed: see Flowchart 3.2 on page 37 Lower blood pressure by about 20% in one hour and then gradually to 160/100 mm Hg within the next six hours. Treat blood pressure as outlined in Flowchart 3.9 on page 46 until referral links are established	

MANAGEMENT OF DIABETES



FLOWCHART 3.11

DIABETES – TYPE 2

STEP 1 RECOGNIZE	• Previously diagnosed • No symptoms • Loss of weight with increased appetite • Increased thirst	• Passing more urine than usual • Ask history of tobacco use • Family history of diabetes • Recurrent infections
STEP 2 EXAMINE	• Measure blood pressure, pulse, height and weight • Auscultate heart and lungs • Assess cardiovascular risk (see Box 3.2 on page 48) • Look for complications (see Box 3.4 on page 53)	• Examine feet for loss of sensation (see Box 3.5 on page 53) • Ask about symptoms of hypoglycemia (see Table 3.6 on page 59) • Look for signs and symptoms of ketoacidosis (see Table 3.6 on page 59)
STEP 3 CHECK	• Urine albumin • Serum creatinine/electrolytes (if feasible) • Fasting blood glucose or random blood glucose (diabetes diagnosed if FBG≥7 mmol/l (126 mg/dl) or RBG ≥11.1mmol/l (200 mg/dl)	• HbA1c (if feasible) • Lipid profile (if feasible) • Electrocardiogram (if feasible)

STEP 4 TREAT	> Angiotensin converting enzyme inhibitor if blood pressure ≥140/80 mm Hg > Statin if 10% or greater 10 year cardiovascular risk > Control blood glucose (see Box 3.6 on page 54) • Metformin (add if blood glucose is not controlled by diet, see Table 3.7 on page 59) • Sulfonylurea (add, if inadequate control or if metformin is contraindicated. (see Table 3.7 on page 59)	If poor control consider insulin (see Table 3.8 on page 59). In general, these are situations in which insulin should be considered: IfA1c is >11% or if on max dose oral meds and above goal – symptoms or evidence of catabolism (polyuria, polydipsia, weight loss) – type 1 diabetes is a possibility – infection, surgery, severe illness, pregnancy, patients with severe kidney dysfunction or heart failure, jaundice or liver failure
STEP 5 REFER	Referral criteria: • Ketoacidosis coma; • Hyperosmolar coma; • Severe infections; • Injuries; • Acute complications e.g. myocardial infarction, stroke, gangrene ; • Diabetic complications; nephropathy, retinopathy, neuropathy	

PRACTICE POINTS

BOX 3.4
Identify complications of diabetes

- Foot complications (see Box 3.5 on page 53)
- Hypoglycemia (see Table 3.6 on page 54)
- Coronary heart disease, cerebrovascular disease (see flowcharts 3.3 on page 39 and 3.4 on page 40)
- Ketoacidosis (see Table 3.6 on page 54)
- Chronic renal disease; neuropathy; peripheral vascular disease; diabetic eye disease (retinopathy)

BOX 3.5
Identify diabetic foot problems as early as possible

Advise on foot hygiene, nail cutting and appropriate footwear. Patient education is critical.

Assess feet at risk (pinprick sensation, vibration perception with a 128 Hz tuning fork), 10 g monofilament pressure sensation at the distal plantar aspect of both great toes and metatarsal joints, and assessment of ankle reflexes.) Those with the following are at high risk of diabetic foot problems.

- Neuropathy
- Limb ischemia (weak or absent peripheral pulse)
- Callus; deformity; Charcot arthropathy*; Infection and/or inflammation; ulceration

Start antibiotic treatment for suspected diabetic foot infection as soon as possible. If feasible, take cultures and samples before the start of antibiotic treatment and refer to hospital.

Visual examination of feet need to be done at every visit if there is peripheral neuropathy. At least one l foot examination annually is recommended for others.

*Charcot arthropathy: degeneration and deformity of weight bearing joints due to loss of sensation

BOX 3.6

Monitoring of blood glucose and blood glucose targets*+:

A fasting plasma glucose 5–7 mmol/litre on waking

- a plasma glucose 5–8 mmol/litre before meals at other times of the day
- a plasma glucose 5–9 mmol/litre at least, 2 hours after eating
- HbA1c target < 8% (fasting not necessary but cost of test is high)

Check for ketones if blood sugar > 14 mmols, if ketones are > 1.0 need referral. In humanitarian settings blood sugar can be monitored using a glucometer, test strips and a lancing device (see Box 3.8 on page 55).

People with type 1 diabetes on multiple injections may need to check blood sugar at least before meals and at bedtime. Daily tests are not essential for people with well controlled type 2 Diabetes. If a person with type 2 diabetes is on sulfonylurea or insulin or is not meeting blood sugar goals, daily blood glucose testing may be necessary.

*Blood glucose targets have been adjusted for humanitarian contexts

+ Glycemic targets can be personalized, based on the individual person and hypoglycemic risk such as age (teenager, elderly), and pregnancy status.

BOX 3.7

Counselling (see Flowcharts 3.19 and 3.20) and advice on self-care

Adapt diet and regular physical activity to conditions of the emergency setting

- A lower calorie intake for overweight and obese patients
- Choose foods with a low glycaemic index
- Replace saturated fats with unsaturated fats
- Avoid trans fats
- High intake of dietary fibre
- Avoid added sugars
- Stop tobacco use and harmful use of alcohol

Give advice on self-care of Diabetes

- Overweight patients should reduce weight by reducing food intake.
- Give preference to low glycaemic -Index foods (e.g. beans, lentils, oats and unsweetened fruit) as the source of carbohydrates in their diet
- If on insulin, avoid skipping meals (as blood glucose may go down) and to carry sweets
- Have your blood glucose level, blood pressure and urine checked regularly
- Eyes should be screened for eye disease (diabetic retinopathy) at the time of diagnosis and at least every two years thereafter
- Give daily attention to feet
  - 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 feet every day and if there is any infection (red, warm, painful areas or injury, seek medical help

BOX 3.8
How to test blood glucose with a glucometer

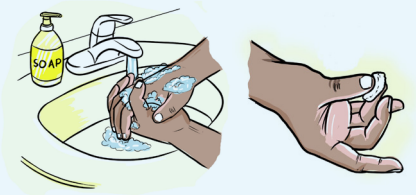
- Explain to patient what you are going to do.
- Wash your hands and wear gloves.
- Insert the glucose test strip into the glucometer.
- Clean the fingertip with an alcohol swab and let it dry.
- Prick the side of fingertip with needle (lancet).
- Gently squeeze the finger until a drop of blood forms.
- Touch and hold the edge of the test strip to the drop of blood.
- After a few seconds, the glucometer will display the blood glucose level on the screen.
- Record result and share with patient.
- Respond to abnormal findings.
- Dispose of all used equipment safely in accordance with safety regulations.

TABLE 3.5
Comparison of type 1 diabetes and type 2 Diabetes

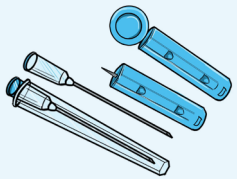
TYPE 1 DIABETES	TYPE 2 DIABETES
• Autoimmune disorder	• Resistance to insulin
• Often diagnosed in childhood	• Usually diagnosed after 30 years of age
• In about 5% of people with diabetes their body weight is normal	• Accounts for the majority of people living with diabetes
• Often associated with raised ketones at diagnosis	• Usually overweight or obese
• Insulin treatment is essential	• Often associated with raised blood pressure and cholesterol
	• Usually treated without drugs or with tablets
	• Insulin given if control is poor with drugs

HOW TO TEST BLOOD GLUCOSE WITH A GLUCOMETER

STEP 1: Wash your hands with warm, soapy and dry well or if you use an alcohol swab, make sure the area is dry before testing.



STEP 2: Prepare a Clean Needle or a lancet



STEP 3: Stick the side of your fingertip with the needle/lancet

STEP 4: Make sure the drop of blood is enough for an accurate reading. Don't touch the strip; just let the blood drop on it.

STEP 5: Stop bleeding by applying pressure on the fingertip with a clean cotton ball or a gauze pad.

FLOWCHART 3.12
DIABETES – TYPE 1

STEP 1 RECOGNIZE	• Previously diagnosed as type 1 diabetes • Rapid loss of weight with increased appetite • Increased thirst and passing more urine than usual • Vision changes and fatigue • Ketosis (see Table 3.6 on page 59)	• Age of onset below 50 years • BMI below 25 kg/m^2 • Personal and/or family history of autoimmune disease • Smoking status
STEP 2 EXAMINE	• Measure blood pressure • Auscultate heart and lungs • Assess cardiovascular risk (see Box 3.2 on page 48) • Features of hypoglycemia (see Table 3.6 on page 59)	• Look for ketoacidosis (see Table 3.6 on page 59) • Look for complications (see Box 3.4 on page 53) • Examine feet for loss of sensation
STEP 3 CHECK	• Urine albumin • Serum creatinine (if feasible)	• Fasting blood glucose, random blood glucose or HbA1c (diabetes diagnosed if FBG≥7 mmol/l (126 mg/dl) or RBG ≥11.1mmol/l (200 mg/dl or HbAlc >6.5) • Lipid profile (if feasible)
STEP 4 TREAT	• Continue insulin regimen (see Box 3.9 on page 57). multiple daily injection basal – bolus insulin regimen is recommended) • Target blood glucose (see Box 3.6 on page 54) • Angiotensin converting enzyme inhibitor if blood pressure ≥140/80 mm Hg • Statin if 10% or greater 10 year risk of CVD	• Counselling (see Flowcharts 3.19 on page 75 and 3.20 on page 79) and self-care advice (Box 3.7 on page 54) • Treat hypoglycemia (see Box 3.10 on page 57) • Detect ketoacidosis (Flowchart 3.13 on page 58) • Management challenges (Box 3.11 on page 57) • Follow up (Box 3.12 on page 57)
STEP 5 REFER	Referral criteria: • ketoacidosis coma (see Flowchart 3.13 on page 58) • acute complications e.g. myocardial infarction, stroke, gangrene (see Flowcharts 3.5 on page 41, 3.7 on page 44) • diabetic complications; nephropathy, retinopathy, neuropathy; • Recurrent hypoglycemia	• hyperosmolar coma; • severe infections; • injuries. (If referral is not posible control blood glucose, manage hydration, treat infections and other complications as shown in flowcharts)

PRACTICE POINTS

BOX 3.9
Insulin regimens

There are three basic types of insulin regimen for Type 1 diabetes.

- **Multiple daily injection basal–bolus insulin regimens:** injections of short-acting insulin or rapid-acting insulin analogue before meals, together with one or more separate daily injections of intermediate-acting insulin or long-acting insulin analogue.
- **Several insulin injections (1-3) per day:** Injections of short-acting insulin or rapid-acting insulin analogue mixed with intermediate-acting insulin.
- **Continuous subcutaneous insulin infusion (insulin pump therapy):** usually a rapid-acting insulin analogue or short-acting insulin.

BOX 3.10
Recognize (see Table 3.6 on page 59) symptoms of hypoglycaemia and treat as follows:

- If decreased level of consciousness as a result of hypoglycaemia give glucagon 1mg intramuscularly, if non responsive in 10 minutes give intravenous glucose.
- As soon as glucagon is given, if the patient is alert it is important to give a mixed meal to keep their blood sugar up (glucagon wears off). Or if the patient is unconscious, may need to start a glucose infusion or at least monitor closely, as hypoglycemia may recur.
- 50 ml of glucose solution, 20% or 25 ml of glucose solution, 50% can be given into a large vein through a large gauge needle; care is required since at these concentrations glucose solution is irritant, especially if extravasation occurs.
- If conscious give oral sugar (e.g. sugary drink, candy etc)

BOX 3.11
Type 1 Diabetes management challenges

- Management of type 1 diabetes in humanitarian settings is challenging.
- Insulin is essential and is included in the Interagency Emergency Health Kit
- It is important to ensure that type 1 diabetic patients have access to insulin as a matter of urgency (see Table 3.8 on page 59)
- Maintenance of normoglycemia with insulin is necessary to prevent complications (cardiovascular disease, diabetic kidney disease, nephropathy and neuropathy)
- Patients need support for Insulin dose adjustment based on self-monitoring
- Taking excess insulin, delaying or missing meals, increase the risk for hypoglycaemia

BOX 3.12
Monitoring and follow up of diabetes patients

If resources are limited, blood glucose can be checked once a month in type 2 diabetes patients who are on a diabetic diet/oral hypoglycemic agents and repeated when they come for follow up visits.

For type 1 diabetes patients and type 2 diabetes patients on insulin, fasting blood glucose test needs to be done daily during the dose adjustment phase. Once stabilised, fasting blood sugar can be checked less frequently.

Once stabilized uncomplicated type 2 diabetes patients can be followed up once in 2-3 months. Type 2 diabetes patients with complications need to be followed up more frequently.

Once stabilized, type 1 diabetes patients need to be seen at least once a month.

Counseling about hypoglycemia symptoms and management must be provided to all patients living with diabetes. They must be advised to contact the healthcare provider if they experience any of these symptoms.

FLOWCHART 3.13
DIABETIC KETOACIDOSIS

STEP 1 RECOGNIZE	• Diabetic ketoacidosis is an emergency and requires urgent transfer to hospital. • In diabetic ketoacidosis blood glucose as well as ketone bodies are raised. Ketone bodies in the urine can be checked with urine test strips. Ketone bodies in the blood can be checked by a finger prick test. Ketone in blood is normal if less than 0.6 mmol/l. • Precipitating factors of diabetic ketoacidosis include infections such as pneumonia or urinary tract infection, inadequate insulin therapy, new onset diabetes mellitus and acute illness such as myocardial infarction or stroke.	• Patients with diabetic ketoacidosis can present with some or all of the following symptoms: polyuria, polydipsia, nausea, vomiting, abdominal pain, visual disturbance, lethargy, altered level of consciousness, tachycardia, tachypnea, and Kussmaul respirations, with a fruity odor to the breath. Patients are usually severely volume depleted with orthostatic hypotension.
STEP 2 DIAGNOSE	In diabetic ketoacidosis blood glucose as well as ketone bodies are raised. Ketone bodies in the urine can be checked with urine test strips. Ketone bodies in the blood can be checked by a finger prick test. Ketone in blood is normal if less than 0.6 mmol/l.	
STEP 3 TREAT UNTIL URGENT TRANSFER	If there is a delay in transferring to hospital, give the following until the patient reaches a hospital: • Oral fluids and subcutaneous insulin if alert, not nauseated or vomiting. • If not alert, give an intravenous infusion of 0.9% sodium chloride 1 liter in the first hour. After the first hour continue 0.9% sodium chloride 250-500 ml per hour. • After initiation of fluid resuscitation, if alert, give soluble insulin subcutaneously*, initial bolus 0.3 units/kg followed by 0.1 unit/kg every hour, until the serum glucose is less than 250 mg/dL (13.9 mmol/L). The insulin dose can then be decreased to 0.05 to 0.1 units/kg and administered every one or two hours until resolution of the ketoacidosis.	• If patient is not alert, if IV infusion and close monitoring is possible give insulin IV as an initial bolus of 0.1 units/kg, followed by an infusion of 0.1 units/kg per hour until the serum glucose is less than 250 mg/dL (13.9 mmol/L). The insulin dose can then be decreased to 0.05 to 0.1 units/kg per hour until resolution of the ketoacidosis. • When the blood glucose concentration falls below 14 mmol/litre change fluids to 0.9% sodium chloride with 5% glucose and 40 mmol/litre potassium chloride. • Identify and treat cause of diabetic ketoacidosis *Subcutaneous insulin dosage has been adjusted to humanitarian contexts

TABLE 3.6
Features of hypoglycemia, hyperglycemia and ketoacidosis

Hypoglycemia	Hyperglycemia	Hyperglycemia with ketoacidosis
Sweating Palpitation Hunger Blurred vision Irritability Confusion, aggressive or irrational behavior Seizures and coma Plasma glucose <4.0 mmol/l	Blurred vision Pronounced thirst Frequent and copious urination Dehydration (dry skin, dry tongue) Weight loss Frequent skin infections	The same as hyperglycemia, plus nausea and vomiting abdominal pain and muscle cramps Reduced level of consciousness and coma heavy, labored breathing (Kussmaul type) smell of acetone ("fruity" breath odor)

* may need to increase dosage gradually if gastrointestinal side-effects occur. Metformin is contraindicated if there is chronic kidney disease. First increase metformin to a maximum of 2000 mg daily (1000 mg twice daily) before adding gliclazide 80 mg or glibenclamide 5 mg. Note that glibenclamide is associated with severe and prolonged hypoglycemia. Gliclazide is shorter acting, and generally is the safer option.

TABLE 3.7
Titrating the dosage of oral hypoglycemic drugs

Agent	Current dosage	Intensify	De-intensify
Gliclazide	80 mg	160 mg	40 mg
Glibenclamide**	5 mg	10 mg+	2.5 mg
Glibenclamide	10 mg	add metformin 2 x 500 mg*	5 mg
Metformin	1000 mg*	3 x 500 mg*	500 mg
Metformin	1500 mg*	add glibenclamide 5 mg+	2 x 500 mg
2 Drugs	5 -10 mg glibenclamide plus 1000 mg -1500 mg metformin	10 mg glibenclamide plus 3 x 500 mg metformin	0 - 5 mg glibenclamide plus 3 x 500 mg metformin

TABLE 3.8
Properties of insulin[24]

Agent	Current dosage	Intensify	De-intensify
Short-acting **Regular/soluble (clear in appearance). The only type that can be administered intravenously**	½ h	2.5 - 5 h	Up to 8 h
Intermediate-acting (cloudy) **NPH or Lente**	1½ h	4 - 12 h	24 h

+ warn of possible hypoglycemia symptoms

**not suitable for people above 60 years.

BRONCHIAL ASTHMA AND CHRONIC OBSTRUCTIVE PULMONARY DISEASE (COPD)

FLOWCHART 3.14
BRONCHIAL ASTHMA

<table>
<tr><td>STEP 1
RECOGNIZE</td><td colspan="2">How to differentiate asthma from COPD

Asthma and COPD present with similar symptoms cough, difficult breathing, tight chest and/or wheezing</td></tr>
<tr><td></td><td>The following features make a diagnosis of asthma more likely:

• previous diagnosis of asthma
• symptoms since childhood or early adulthood
• history of hayfever, eczema, 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
• Responds to salbutamol</td><td>The following features make a diagnosis of COPD more likely:

• previous diagnosis of COPD
• history of heavy smoking for years
• history of exposure to burning fossil fuels, or to occupational dust
• onset in middle age or later
• symptoms worsened slowly over a long period of time
• long history of daily or frequent cough and sputum production before starting shortness of breath
• symptoms persistent with little day to day variation</td></tr>
<tr><td>STEP 2
DIAGNOSE</td><td colspan="2">Measure Peak Expiratory Flow rate (PEFR)

• Give two puffs of salbutamol and re-measure in 15 minutes
• If the PEF improves by 20%, a diagnosis of asthma is very probable.
• Smaller response makes a diagnosis of COPD more likely</td></tr>
</table>

STEP 3 ACCESS CONTROL	Asthma is considered to be well controlled if: • daytime asthma symptoms and uses a beta agonist two or fewer times per week; • night time asthma symptoms two or fewer times per month; • no or minimal limitation of daily activities; • no severe exacerbation (i.e. requiring oral steroids or admission to hospital) within a month; • a PEFR, if available, above 80% predicted. (see Box 3.13 on page 63) If any of the above markers are exceeded, the patient is considered to have uncontrolled asthma. Check whether the patient is using the correct inhaler technique (see Box 3.14 on page 65)
STEP 4 TREAT	Increase or decrease treatment (see Table 3.9 on page 62), according to how well asthma is controlled using an incremental approach: Level 1. Inhaled salbutamol prn Level 2. Inhaled salbutamol prn plus low-dose inhaled beclometasone, starting with 100 ug twice daily for adults and 100 ug once or twice daily or children Level 3. Same as Level 2, but give higher doses of inhaled beclometasone, 200 ug or 400 ug twice daily Level 4. Add low-dose oral theophylline to Level 3 treatment (if long-acting beta agonists and leukotriene antagonists are not available) Level 5. Add oral prednisolone, but in the lowest dose possible to control symptoms (nearly always less than 10 mg daily) At each step, check the patient's adherence to treatment and observe their inhaler technique. Give advice to patient on self care of asthma (Box 3.15 on page 67) including proper use of inhaler (Box 3.14 on page 65) and nebulizer (Box 3.16 on page 67) (if available)

FOLLOW-UP

If symptoms are well controlled for a period of approximately three months and the patient is asymptomatic a gradual reduction in medication (Table 3.9 on page 62), can be tried reevaluating every 2-3 weeks.

Patients should be advised to see a doctor when ever they have exacerbations.

Frequency of follow-up depends on the severity of asthma. Well controlled mild asthma patients can be reviewed once every three months.
Severe asthma patients who are unstable may need to be seen at least every two weeks.

TABLE 3.9
Medicines used in the treatment of bronchial asthma and COPD

Salbutamol	Inhalation (aerosol): 100 micrograms (as sulfate) per dose. Injection: 50 micrograms (as sulfate)/ mL in 5 mL ampoule. Metered dose inhaler (aerosol): 100 micrograms (as sulfate) per dose. Respirator solution for use in nebulizers: 5 mg (as sulfate)/mL
Beclomethasone	Inhaler: 50 micrograms (dipropionate) per dose; 100 micrograms (dipropionate) per dose
Budesonide	Inhaler: 100 micrograms per dose; 200 micrograms per dose.
Ipratropium bromide	Inhaler (aerosol): 20 micrograms/metered dose
Prednisolone	Oral liquid: 5 mg/mL. Tablet: 5 mg; 25 mg
Hydrocortisone	Powder for injection: 100 mg (as sodium succinate).
Oral bronchodilators	Oral bronchodilator therapy is discouraged due to the slower onset of action and higher rate of side-effects compared with aerosols. As aerosols remain expensive and unaffordable in some low resource settings salbutamol (tablet 4 mg, 8 mg), terbutaline (tablet 5 mg, 10 mg), theophylline (tablet 100 mg thrice a day or modified-release 200 mg, 300 mg at night) continue to be used.
Antibiotics	Antibiotics (one of the following is given for about a week, if respiratory infection is suspected to be bacterial) Doxycycline, 100 mg twice daily Amoxicillin, 500 mg orally every 8 hours Trimethoprim-sulfamethoxazole, one tablet twice daily Amoxicillin-clavulanate potassium, one 500 mg/125 mg tablet three times daily or one 875 mg/125 mg tablet twice daily

BOX 3.13

How to use a peak flow meter

A peak flow meter is a small hand -held device that can help to monitor asthma. When one blows into it, the speed of airflow from the lungs is recorded. Patient should measure the peak flow rate at the same time each day and bring the records to the consultation.

Educate the patient on how to use a peak flow meter as follows:

- Move the sliding marker (red) to the beginning of the numbered scale.
- Stand straight and take a deep breath in to fill your lungs.
- While holding the breath, place the mouth-piece in the mouth and close lips around it.
- Blow out fast and forcefully in a single breath, emptying the lungs.
- Record the number against the (red) marker.
- Repeat this process three times.
- If the three readings are close together the measurement technique has been correct.
- Take the highest of the three readings as the peak flow rate.

If asthma is well controlled, the peak flow rate should be measured when asthma is getting worse. More severe asthma may require several measurements daily.

HOW TO INTERPRET THE PEAK FLOW RATE (SEE TABLE 3.10 BELOW)

A “normal” peak flow rate is based on a person’s age, height and sex and can be read off a chart (see Table 3.10 below). In general, a normal peak flow rate can vary as much as 20 percent.

80 - 100% of "normal" PFR		Asthma is under reasonably good control.
50 - 80% of "normal" PFR		Signals caution and requires adjustment of the dose of asthma medications.
Less than 50% of "normal" PFR		Signals severe airway narrowing. Rescue medication has to be taken and medical advice sought.

TABLE 3.10
Peak expiratory flow rates (Liters/minute)

WOMEN

AGE	HEIGHT (INCHES)				
	55	60	65	70	75
20	390	423	460	496	529
25	385	418	454	490	523
30	380	413	448	483	516
35	375	408	442	476	509
40	370	402	436	470	502
45	365	397	430	464	495
50	360	391	424	457	488
55	355	385	418	451	482
60	350	380	412	445	475
65	345	375	406	439	468
70	340	369	400	432	461

MEN

AGE	HEIGHT (INCHES)				
	60	65	70	75	80
20	554	602	649	693	740
25	543	590	636	679	725
30	532	577	622	664	710
35	521	565	609	651	695
40	509	552	596	636	680
45	498	540	583	622	665
50	486	527	569	607	649
55	475	515	556	593	639
60	463	502	542	578	618
65	452	690	529	564	603
70	440	677	515	550	587

BOX 3.14

Give the following advice to the patient

How to use an inhaler

Inhalers deliver a spray of medicine so that the patient can breathe it deep into the lungs. The correct inhaler technique depends on the device.

There are several types of inhaler devices for asthma and COPD

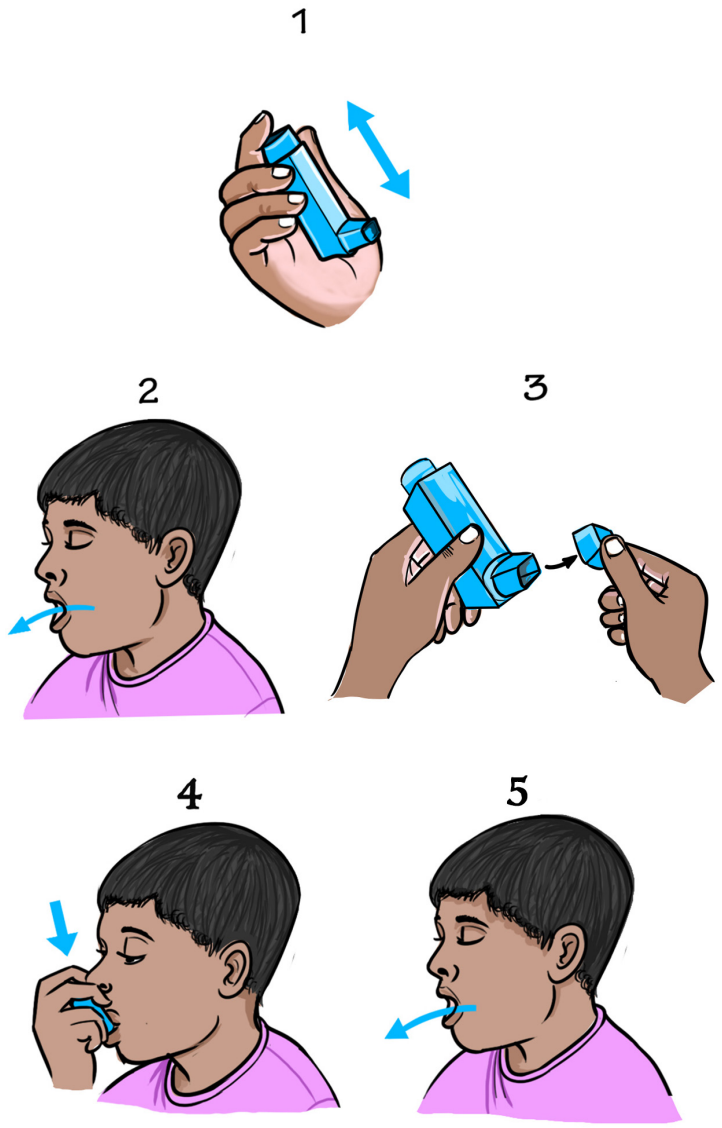
1. Manually-activated metered-dose inhalers
2. Breath-activated pressurized metered-dose inhalers
3. Dry powder inhalers

Technique of using the manually-activated metered dose inhaler

1. Check dose counter (if device has one). Hold inhaler upright and shake well.
2. Breathe in and out gently and deeply.
3. Remove cap, put mouthpiece between teeth and close lips around it well.
4. Start to breathe in slowly through mouth and at the same time press down on canister
5. Continue to breathe in slowly and deeply. Hold breath count to five and while holding breath, remove inhaler from mouth and breathe out gently.

Technique of using the breath-activated metered-dose inhaler

1. Check dose counter. Hold inhaler upright and shake well.
2. Breathe in and out gently and deeply.
3. Keep inhaler upright while twisting grip at the base: twist around and then back until a click is heard, before placing the mouthpiece in the mouth.
4. Breathe strongly and deeply in order to draw the medication out of the inhaler
5. Remove inhaler from mouth



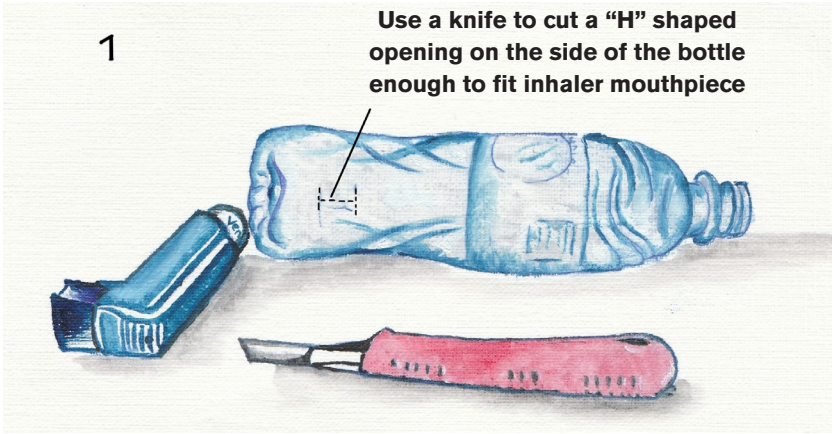
BOX 3.14

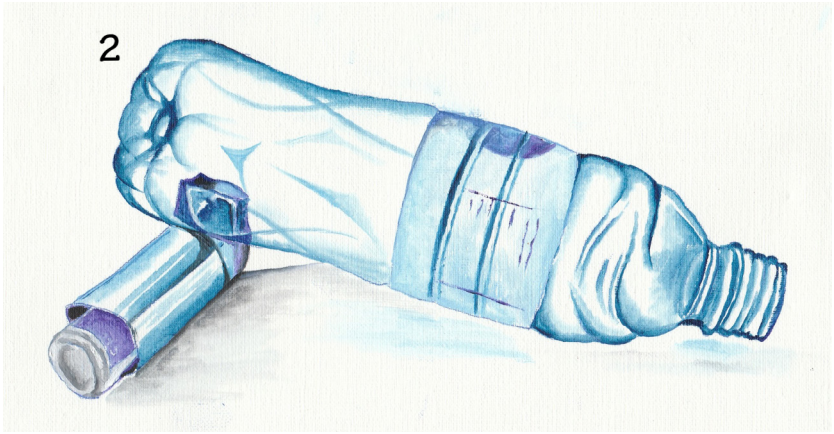
Give the following advice to the patient (continuation)

Inhaling medicine can be facilitated by attaching a spacer to the inhaler.

If a conventional spacer is not available, a 500 ml plastic bottle can be used as a spacer. The mouthpiece of the inhaler is inserted into a hole made in the bottom of the bottle as shown here. Patient breathes from the mouth of the bottle in the same way as from a spacer.

If more than one dose is needed, repeat the steps. After using the inhaler, rinse mouth out with water, or brush teeth, or get a drink. Clean the inhaler each week.





BOX 3.15

Advice to patients with asthma or COPD

Advice patients with asthma and COPD to:

- stop smoking;
- avoid cigarette smoke and trigger factors for asthma, if known;
- reduce dust in the surrounding environment as far as possible for example by using damp cloths to clean furniture, sprinkling the floor with water before sweeping and shaking and exposing mattresses, pillows, blankets, etc. to sunlight;
- keep the area where meals are cooked well ventilated by opening windows and doors and if feasible avoid indoor cooking with firewood.

Regarding treatment, ensure that the patient:

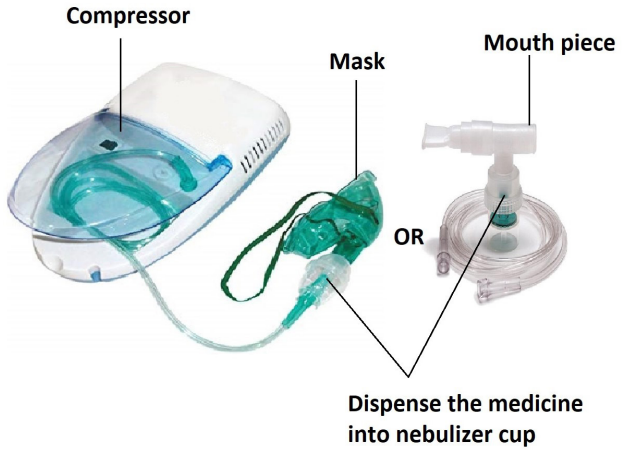
- understands the importance of adherence to medications. Check whether the patient has a supply of medicines and knows the dose schedule. Inquire about any side effects
- understands how to measure the peak flow rate (see Flowchart 3.14 on page 60) and interpret for monitoring progress
- follows the correct inhaler technique if on aerosols (see Flowchart 3.14 on page 60)
- knows what to do if their asthma or COPD deteriorates;
- understands that the benefit from 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.

BOX 3.16

How to use a nebulizer (Note: Nebulizers may not be available in some humanitarian settings)

How to use a nebulizer

A nebulizer is a small machine that delivers liquid medicine as a mist. Patient has to sit with the machine and breathe in through a connected mouthpiece or face mask taking slow, deep breaths for 10 to 15 minutes. People experiencing an exacerbation of asthma can benefit from the use of a nebulizer because it can deliver medicine with less effort than an inhaler.



There are two types of nebulizers;
atomizer jet (compressor nebulizer) and ultrasonic. Most nebulizers work by using air compressors. Ultrasonic nebulizers, use sound vibrations, is quieter, but costs more. Nebulizers have to be used according to the manufacturer's instructions.

The basic steps are as follows:

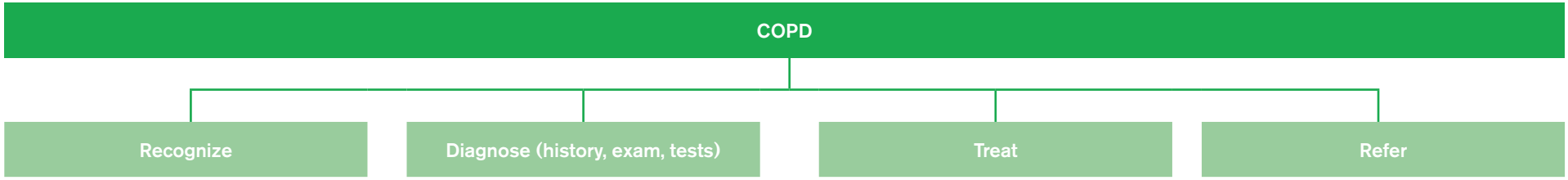
- Place the components of the nebulizer unit (air compressor, medication cup, mask or mouthpiece, tubing and measuring device (medication ampule, syringe, etc.) on a stable surface. Plug in the electrical cord.
- Wash hands and measure medication with the suggested measuring instrument, according to instructions (for example, salbultamol 5 mg/2.5 ml nebulizer solution).
- Open the top of the nebulizer cup and dispense the medicine in front of the cup. Close the cup.
- Attach the cup to the mouthpiece or face mask and connect the tubing to the compressor and the cup.
- Get the patient to place the mouthpiece between their teeth and seal their mouth around it. If a mask is used put it on so that it's secure on the face with no gaps.
- Switch on the power and get the patient to take slow, deep breaths from the mouthpiece or mask, holding each breath for two to three seconds before exhaling. Treatment should continue until the medicine has been used.

FLOWCHART 3.15
EXACERBATION OF ASTHMA

STEP 1 RECOGNIZE	Recent, sustained worsening of symptoms (wheezing, breathlessness and cough) from a person's stable state
STEP 2 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%
STEP 3 TREAT	**FIRST LINE TREATMENT** • Salbutamol in high doses by metered dose inhaler and spacer (e.g. four puffs every 20 minutes for one hour) or by nebulizer; • Oxygen, if available, and if oxygen saturation levels are low (below 90%) • Prednisolone 30 – 40 mg for five days for adults and 1mg/kg for three days for children, or longer, if necessary, until they have recovered; • Reassess at intervals depending on severity if necessary follow second line treatment. **SECOND LINE TREATMENT** • Increase frequency of dosing via an metered dose inhaler and spacer or give salbutamol by continuous nebulization at 5 –10mg per hour, if a nebulizer is available; • For children, nebulized ipratropium, if available, can be added to nebulized salbutamol (see Table 3.9 on page 62).

FLOWCHART 3.16

CHRONIC OBSTRUCTIVE PULMONARY DISEASE



STEP 1 RECOGNIZE	• Smoking or a past history of smoking • Breathlessness • Chronic cough with regular sputum production	• Wheeze • Rhonchi on auscultation
STEP 2 DIAGNOSE	Measure PEFR (see Box 3.13 on page 63) and oxygen saturation if possible	
STEP 3 ASSESS SEVERITY	**Stable COPD** • Moderate – if breathless with normal activity • Severe – if breathless at rest	**COPD exacerbation** Recent, sustained worsening of symptoms from a person's stable state (may have fever and/or purulent sputum)
STEP 4 TREAT	**Stable COPD** • Inhaled salbutamol, two puffs as required, up to four times daily; • If symptoms are still troublesome, consider low-dose oral theophylline; • Inhaled ipratropium may be added (see Table 3.9 on page 62)	**Exacerbation give** • Antibiotics • Oral prednisolone 30 - 40 mg for a week • Inhaled salbutamol four puffs every 20 minutes for one hour or by nebulizer (see Box 3.16 on page 67) • Oxygen, by a mask that limits the concentration to 24% or 28%.

PRACTICE POINTS

Reasons for referral (non-urgent) include the following:

- Assessment for oxygen therapy or long-term nebuliser therapy
- Assessment for oral corticosteroid therapy
- A rapid decline in Forced Expiratory Volume in one second (FEV1)
- Onset of symptoms under 40 years
- Frequent infections (to exclude bronchiectasis)
- Onset of right heart failure
- Haemoptysis (to exclude carcinoma of the bronchus)

The following features are associated with a poor prognosis

- Smoking status
- Severe breathlessness
- Chronic hypoxia
- Right heart failure
- Severe and frequent exacerbations and hospital admissions

FLOWCHART 3.17
EPILEPSY

The supply of antiepileptic medications may be disrupted during humanitarian settings. As a result, people with epilepsy may experience seizures. There are different types of epilepsy. This protocol is for the management of convulsive epilepsy.

CONVULSIVE EPILEPSY

Recognize | **Exclude other causes of fits** | **Treat**

STEP 1 LOOK FOR FEATURES OF EPILEPSY	Look for criteria for the diagnosis of convulsive seizure: Convulsive movements lasting longer than 12 minutes With two or more of the following: • loss of or impaired consciousness • stiffness or rigidity of the body or limbs lasting longer than 1-2 minutes • bitten or bruised tongue or bodily injury • loss of bladder or bowel control during the episode • confusion, drowsiness or abnormal behavior after fit
STEP 2 EXCLUDE OTHER CAUSES	**1.** Check for signs and symptoms of nervous system infection: fever, headache, meningeal irritation (e.g. stiff neck). **2.** Check for other possible causes of convulsions: head injury, metabolic abnormality (e.g. hypoglycaemia, hyponatraemia), alcohol or drug intoxication or withdrawal **3.** If nervous system infection or another cause for seizures is identified treat the cause and refer to hospital.
STEP 3 DIAGNOSE	Consider convulsive **epilepsy** if the person has had two or more unprovoked, convulsive seizures on two different days in the last 12 months **OR** has an established diagnosis of epilepsy
STEP 4 TREAT	• Resume antiepileptic drugs if the person has ever used antiepileptic medication that controlled the seizures. • New treatment can be initiated using any of the antiepileptic drugs listed in table 3.11 (page 73) and 3.12 (page 74), with due regard for potential side-effects[24]. Treatment begins with the lowest dose and is increased gradually. Phenobarbital is included in the Interagency Health Kit. • The decision to start antiepileptic medication in a pregnant woman should be made by a physician with consideration for the potential harm to the fetus from either the seizures or the medication. If the decision is made to start medication, then either phenobarbital or carbamazepine can be used. • Information and advice should be offered to the person with epilepsy and the carers (see self-care living with epilepsy on page 100).

FLOWCHART 3.18
STATUS EPILEPTICUS

Convulsive seizures lasting longer than 30 minutes constitute status epilepticus and may be complicated by cardio respiratory depression and brain injury. Immediate emergency care and treatment is required for children and adults who have prolonged (lasting five minutes or more) or repeated (three or more in an hour) convulsive seizures.

STEP 1 TREAT	• Secure airway • Give oxygen • Prevent injury • Assess cardiac and respiratory function • Check blood glucose levels • Get intravenous access in a large vein	Give intravenous lorazepam or diazepam[26]. Lorazepam or Diazepam for adults 5-10 mg IV initially, repeated in 10-15 minutes. For children five years or older, 1 mg IV every 2-5 minutes. Administer a maximum of two doses if necessary. (diazepam is available in the Inter Agency Emergency Medicines Kit). • If seizures continue, administer intravenous phenobarbital or phenytoin as second-line treatment. • If intravenous injection is not feasible buccal midazolam (if available) or rectal diazepam could be used (see Table 3.12 on page 74). Preference may be guided by availability and expertise.
STEP 2 REFER	If there are concerns or difficulties monitoring airway, breathing, circulation transfer to hospital	

PRACTICE POINT

Rectal diazepam[27]

Intravenous diazepam may be difficult to administer to a convulsing child because of the need for intravenous access and is not ideal for rapid treatment in settings by non-medical care givers.

- Diazepam given rectally may be helpful in treating prolonged convulsions when intravenous injection is not possible. A rectal dose of 0.5 mg/kg (maximum 10 mg) of injectable diazepam, is given undiluted or diluted with a 50% propylene glycol solution.
- A tuberculin syringe (without a needle) or a syringe with a rectal tube (soft and lubricated) can be used. If using a rectal tube, draw up the dose with the rectal tube already fitted to the syringe to fill the dead space in the tube and thus ensure correct dosing.
- The tube or syringe is introduced only 4-5 cm into the rectum.
- If possible, infants and toddlers should be placed prone for rectal diazepam to be administered. Older children should be positioned on their side, in the recovery position.
- After administration, keep the child in the same position and hold the buttocks together for a few minutes to limit leakage from the rectum.

TABLE 3.11
Antiepileptic medications[26] (adapted from mhGAP)

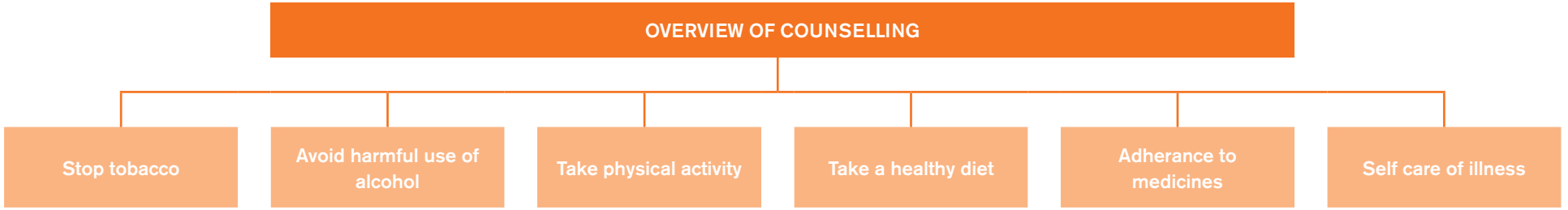
	PHENOBARBITAL	CARBAMAZEPINE	PHENYTOIN	VALPROATE
Starting dose in children	2-3 mg/kg/day	5 mg/kg/day	3-4 mg/kg/day	15-20 mg/kg/day
Typical effective dose in children	2-6 mg/kg/day	10-30 mg/kg/day	3-8 mg/kg/day (max. dose 300 mg/day)	15-30 mg/kg/day
Starting dose in adults	60 mg/day	200-400 mg/day	150-200 mg/day	400 mg/day
Typical effective dose in adults	60-180 mg/day	400-1400 mg/day	200-400 mg/day	400-2000 mg/day
Dosing schedule	Once daily at bedtime	Twice daily	In children, give twice daily; in adults, it can be given once daily	Usually 2 or 3 times daily
Rare but serious side-effects	Severe skin rash (Stevens-Johnson syndrome) Bone marrow depression Liver failure	Severe skin rash (Stevens-Johnson syndrome, toxic epidermal necrolysis) Bone marrow depression	Anemia and other hematological abnormalities Hypersensitivity reactions including severe skin rash (Stevens-Johnson syndrome) Hepatitis	Drowsiness Confusion
Common side-effects	Drowsiness Hyperactivity in children	Drowsiness Trouble walking Nausea	Nausea, vomiting, constipation Tremor Drowsiness Ataxia and slurred speech Motor twitching Mental confusion	Lethargy Sedation Tremor Nausea, diarrhea Weight gain Transient hair loss (regrowth normally begins within 6 months) Impaired hepatic function
Precautions	Avoid phenobarbital inchildren with intellectual disability or behavioral problems			Avoid valproate in pregnant women

TABLE 3.12
Antiepileptic medicines

CARBAMAZEPINE	Oral liquid: 100 mg/5 ml. Tablet: 100 mg; 200 mg.
VALPROIC ACID (SODIUM VALPROATE)	Injection: 100 mg/mL in 4 mL ampoule; 100 mg/mL in 10 mL ampoule. Oral liquid: 200 mg/5 ml. Tablet: 100 mg; 200 mg; 500 mg (sodium valproate).
PHENYTOIN	Injection: 50 mg/ml in 5 mL vial (sodium salt). Oral liquid: 25 mg to 30 mg/5 ml. Tablet: 25 mg; 50 mg; 100 mg (sodium salt)
PHENOBARBITAL	Injection: 200 mg/ml (sodium). Oral liquid: 15 mg/5 ml. Tablet: 15 mg to 100 mg.
DIAZEPAM	Injection: 5 mg/ml. Oral liquid: 2 mg/5 ml. Gel or rectal solution: 5 mg/ml in 0.5 ml; 2 ml; 4 ml tubes. Tablet: 5 mg; 10 mg.
LORAZEPAM	Injection: 2 mg/ml in 1 ml ampoule; 4 mg/ ml in 1 ml
MIDAZOLAM	Injection: 1 mg/ml; 5 mg/ml. Oral liquid: 2 mg/ml. Tablet: 7.5 mg; 15 mg.

FLOWCHART 3.19

HEALTH EDUCATION AND COUNSELLING ON HEALTHY BEHAVIORS



In humanitarian settings adhering to regular physical activity or a healthy diet may be difficult or not feasible. Counselling may be more applicable in protracted crisis situations. When feasible, people should be offered counselling on healthy behaviors and encouraged to stop the use of alcohol and all forms of tobacco. Appropriate steps could also be taken to help non-smokers to avoid exposure to second-hand tobacco smoke as much as possible.

WHAT ARE THE MAIN ELEMENTS OF COUNSELLING?

Introduce self and build rapport: When counselling, create an environment that facilitates open communication by meeting the person in a private space, when possible. It is helpful to position yourself at the same eye level as the person being counselled. Welcome the person, introduce yourself and your position in a culturally appropriate way. Show empathy and understanding and let the person know that information discussed during the visit will not be shared without their permission.

Assess current behavior (e.g. see Flowchart 3.20 Step 1 on page 79), with regard to physical activity, diet, tobacco and alcohol use. Be clear and concise. Use language that the person is familiar with. If needed, try to work with trained interpreters, preferably of the same gender as the person you are providing care for.

Discuss health impact of unhealthy behaviors (e.g. see Flowchart 3.20 Step 2 on page 79). Stress can impair a person's ability to process information. Be patient in obtaining and giving information. Provide one point at a time to help the person understand what is being said. It is also important to assess the person's strengths and resources (e.g. social and family support systems).

Examine motIV Ation and self -efficacy to adopt healthy behavior (e.g. see Flowchart 3.20 Step 3 on page 79) **and assess readiness to change and discuss possible actions** (e.g. Flowchart 3.20 Step 4 and 5 on page 79).

Flowchart 3.20 (page 79) on support for tobacco cessation uses motivational interviewing in a simplified form. Detailed protocols which use motivational interviewing to promote healthy behavior are available but are more time consuming to implement and require specific training*.

*https://www.researchgate.net/publication/5289836_Vitalum_study_design_RCT_evaluating_the_efficacy_of_tailored_print_communication_and_telephone_motIV Ational_interviewing_on_multiple_health_behaviorsed

FLOWCHART 3.19

HEALTH EDUCATION AND COUNSELLING ON HEALTHY BEHAVIORS (continued)

STAYING HEALTHY IS AS EASY AS ABCDE

AVOID ALCOHOL

CUT DOWN ON
SALT AND SUGAR

EAT PLENTY OF
VEGETABLES AND FRUITS

BE PHYSICALLY ACTIVE

DON'T USE
TOBACCO PRODUCTS

Healthy behaviors to prevent CHD and CeVD (adapted and reproduced with permission from the World Health Organization)

STOP TOBACCO (see Flowchart 3.20 on page 79)

- Encourage all non-smokers not to begin smoking
- Advise smokers to stop smoking and support them in their efforts
- Advise individuals who use other forms of tobacco

AVOID HARMFUL USE OF ALCOHOL

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 while under the influence of alcohol
- having medical conditions made worse by alcohol e.g. diabetes, hypertension
- having difficulty in controlling frequency of drinking

If alcohol is consumed, intake should be limited-up to one drink per day for women and up to two drinks per day for men.

1 standard drink is:

- 75-100 ml of standard wine (12% - 13% alcohol), or
- 250 ml of standard beer (4% alcohol)
- 25 ml standard whisky 40% alcohol

ADVICE ON TAKING REGULAR PHYSICAL ACTIVITY

In humanitarian settings adhering to regular physical activity outdoors may be difficult. People should be encouraged to keep physically active at least 30 minutes day most days of the week (150 minutes a week). They should be encouraged to:

- take a walk when there is daylight,
- engage in household chores such as:
  - cleaning,
  - arranging furniture and belongings,
  - washing and drying clothes,
  - cooking and preparing food

People should also be advised to

- avoid sitting for more than 30 minutes continuously
- work in the standing position rather than in the sitting position
- move the body and limbs as often as possible.

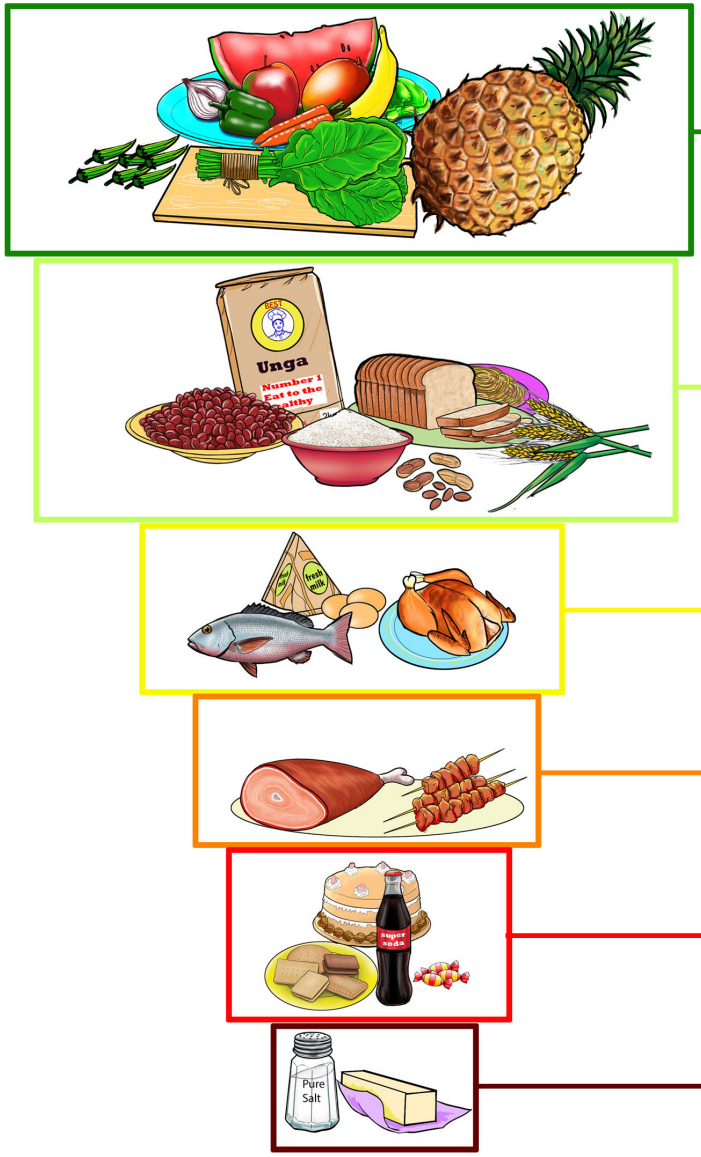
- When feasible they should progressively increase physical activity to moderate levels (such as brisk walking); at least 30 minutes on at least five days per week
- Overweight could be prevented by reducing high calorie food such as sweets and food rich in fat and taking regular physical activity

MAINTAIN A HEALTHY DIET

In humanitarian settings strict adherence to a healthy diet can be challenging. Nevertheless, it is feasible to follow some aspects of healthy eating (see below for features of a healthy diet pyramid). Advice should be given to:

- Avoid salt at the table and reduce salty foods such as pickles, salty fish, fast food, processed food, canned food and stock cubes
- Restrict salt to less than five grams (one teaspoon) per day
- Restrict sugary fizzy drinks and processed food
- Take five servings (400-500 grams) of fruits and vegetable per day (1 serving is equivalent to one orange, apple, mango, banana or 3 tablespoons of cooked vegetables). Eat fruits that are available and are in season.
- Eat more plant based food. They have more fiber and less saturated fat than animal based food.
- Limit fatty meat, dairy fat and cooking oil (less than two tablespoons per day)
- Avoid trans-fats
- Replace other meat with chicken (without skin)
- Choose non refined cereals such as whole meal bread, brown rice, whole grain pasta, unrefined barley, buckwheat and quinoa
- Eat legumes, nuts and seeds daily

ADVICE ON MAINTAINING A HEALTHY DIET



Generous daily intake of vegetables and fruits

Daily intake of whole grains, nuts, seeds, legumes and breads within limits

Limit fish, dairy products, eggs, 2-3 times a week

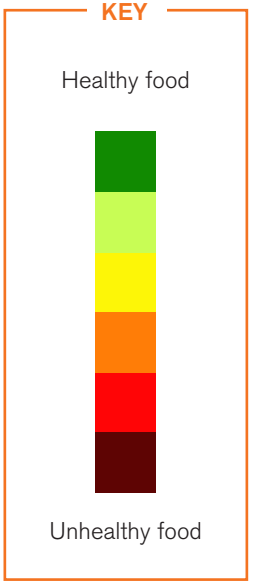
Limit beef and red meat to once a week

Restrict sweets, salt, processed food, sugary fizzy drinks and use of cooking oil

Avoid hydrogenated fat and adding salt on the table

Explain the key elements of a healthy diet; balancing healthy and less healthy food items as shown in the food pyramid:

- Healthy food such as whole grain legumes and fruit should be eaten in appropriate quantities daily (shown in green section).
- Certain food items e.g. meat should be limited.
- Unhealthy food (shown in yellow section) e.g. sweets should be restricted.
- Harmful food (shown in red section), e.g. food containing trans-fats should be avoided



ADHERENCE TO PRESCRIBED MEDICATION(S):

- Teach the patient how to take medicines like inhalers (see Box 3.14 on page 65)
- Explain the difference between medications for long-term control (e.g. blood pressure) and rescue medicines for quick relief (e.g. for wheezing)
- Tell the patient the reason for prescribing the medication(s)
- Show the patient the correct dosage and explain how many times a day to take the medicine
- Label and package the tablets
- Explain the importance of keeping an adequate supply of the medications
- Explain the need to take the medicines as advised even if there are no symptoms
- Explain the need to keep regular clinic appointments

FLOWCHART 3.20

SUPPORT FOR TOBACCO CESSATION

STEP 1 ASK	How often do you use tobacco? How long have you used tobacco?
STEP 2 ADVISE	Advise to quit in a clear, strong and personalized manner. 'Tobacco use increases the risk of heart attack, stroke, cancer and lung disease. Quitting tobacco is one of the most important things to protect the health of your heart, brain and lungs. You have to quit now.'
STEP 3 ASSESS	Are you willing to quit now? › If 'yes' assist in preparing quit plan. › If 'no' give a leaflet on health hazards of tobacco
STEP 4 ASSIST	Assist in preparing plan to quit: › Set quit date › Inform family and friends and ask for their support › Remove tobacco products › Remove items that prompt you to smoke › Arrange a follow-up visit in one month
STEP 5 ARRANGE	At follow up visit: › Congratulate success › Reinforce the message › If patient has relapsed, consider more intensive follow-up and support from the family.

PEN-H PART IV A

FLOWCHARTS (A-D)

FOR COMMUNITY HEALTH WORKERS

CONTENTS

INTRODUCTION

Community Health Workers (CHWs) play an important supportive role in the provision of care for NCDs in humanitarian settings through the following activities[28]:

1. Liaise between clinical staff and people living with NCDs
2. Make home visits to monitor treatment adherence and onset of complications
3. Raise awareness about prevention and care of NCDs among patients and throughout the community
4. Monitor the progress of patients
5. Strengthening continuity of care through follow up of patients in the community
6. Facilitate patient peer support groups and health promotion through community NCD activities

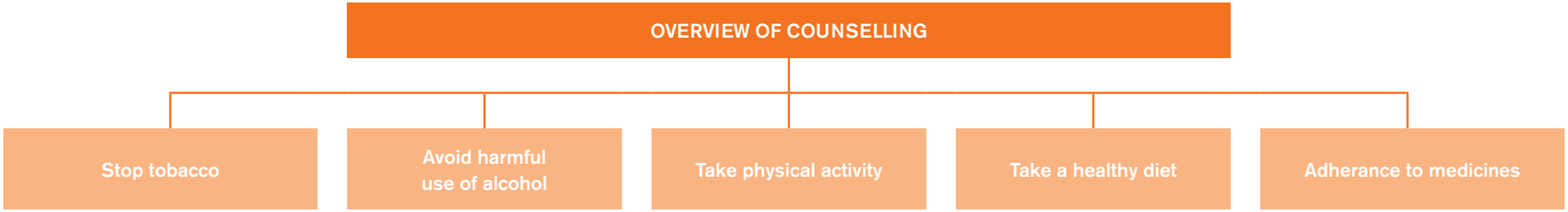
In humanitarian settings physicians and nurses are under heavy pressure to see as many people as possible in the shortest amount of time. As a result consultations in health facilities are often brief and focused on the most urgent health issues. CHWs can help to improve coordination between clinical staff and patients by gathering information from patients on their literacy level, symptoms, past illnesses, ability to follow self-care protocols and family/social support systems.

CHWs can also provide general information, and guidance regarding accessing available medical services. In the community, they can lead support groups and organize community activities (e.g., group discussion on healthy behaviors or walking groups) to promote healthy behaviors. In addition, CHW can facilitate behavioral change by assisting people in setting basic goals for healthy eating and regular physical activity as defined in flowcharts

The Flowcharts A to D are tools to assist CHW to perform some of the above tasks in refugee camps, primary care facilities and during home visits. These flowcharts may need context specific adaptation based on the nature, stage and organization of different humanitarian settings and the level of training given to CHW.

FLOWCHART A

HEALTH EDUCATION AND COUNSELLING ON HEALTHY BEHAVIORS



BEGIN COUNSELLING BY DOING THE FOLLOWING:

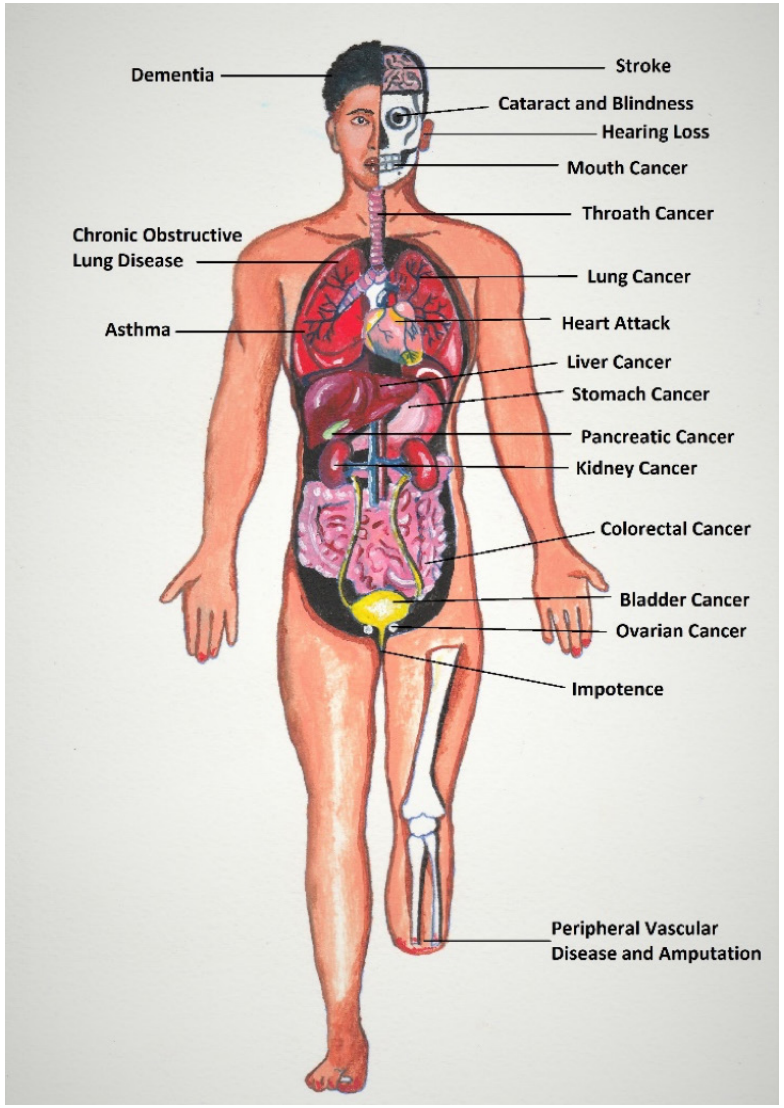
1. Introduce yourself in a culturally appropriate friendly manner.
2. Counsel in a private place to facilitate open communication.
3. Position yourself at the same eye level of the person you are counselling.
4. Throughout the session show empathy and be non-judgmental.
5. Let the person know that information discussed during the visit will not be shared without their permission.

FLOWCHART A1

SUPPORT FOR TOBACCO CESSATION

STEP 1 ASK	How often do you use tobacco? How long have you used tobacco?
STEP 2 ADVISE	Advise to quit in a clear, strong and personalized manner. 'Tobacco use increases the risk of heart attack, stroke, cancer and lung disease. Quitting tobacco is one of the most important things to protect the health of your heart, brain and lungs. You have to quit now.'
STEP 3 ASSESS	Are you willing to quit now? › If 'yes' assist in preparing quit plan. › If 'no' give a leaflet on health hazards of tobacco
STEP 4 ASSIST	Assist in preparing plan to quit: › Set quit date › Inform family and friends and ask for their support › Remove tobacco products › Remove items that prompt you to smoke › Arrange a follow-up visit in one month
STEP 5 ARRANGE	At follow up visit › Congratulate success › Reinforce the message › If patient has relapsed, consider more intensive follow-up and support from the family.

DISEASES CAUSED BY TOBACCO



TOBACCO SMOKING – QUIT PLAN

IT IS NEVER TOO LATE TO QUIT

REMIND YOURSELF THAT IF YOU SUCCEED THERE IS A HEALTH RETURN

In 20 minutes	Carbon monoxide in your blood drops
In 12 hours	Your heart rate drops
In 2 weeks	Heart attack risk drops and lungs function better
In 6 weeks	Coughing and shortness of breath improves
In 1 year	Heart attack and stroke risk is very much less

WRITE DOWN YOUR QUIT DATE: _____

(If possible choose an important date such as the day after your birthday)

IDENTIFY THE TRIGGERS THAT TEMPT YOU TO SMOKE AND HOW YOU PLAN TO AVOID THEM

TRIGGER	WHAT WILL YOU DO TO AVOID
Talking on the phone	
Finishing a meal	
Drinking coffee	
Before going to bed	
Watching TV	
Frustrations about unemployment	
Taking a work break	
Drinking alcohol	
Stress at work	
Prolonged free time	
Chewing khat	
Other	

> **CHECK WHETHER YOU HAVE REMOVED TOBACCO PRODUCTS FROM HOME AND WORKPLACE** **YES / NO**

FLOWCHART A2

SUPPORT TO REDUCE HARMFUL USE OF ALCOHOL

STEP 1
ASK

1 Do you consume alcohol? **YES / NO**

(If answer is No, Alcohol abstinence should be reinforced. You must never start taking alcohol for health reasons. If answer is Yes, proceed to next three questions and record information)

2 Which type of alcohol do you consume?

BEER _____

LOCALLY BREWED ALCOHOL _____

WHISKY/BRANDY/VODKA _____

WINE _____

3 How often do you consume alcohol?

DAILY _____

SEVERAL TIMES A WEEK _____

OCCASIONALLY _____

4 How long have you consumed alcohol regularly ? _____

STEP 2
ADVICE

1 Provide advice in a clear, strong and personalized manner.

'Alcohol use increases the risk of heart attack, stroke, cancer and liver disease. You will also find that your craving for alcohol increases with time. Quitting or reducing alcohol use is one of the most important things to protect the health of your heart, brain, liver and nerves.'

2 Advise people not to consume alcohol when additional risks are present, such as:

- driving or operating machinery
- having medical conditions made worse by alcohol e.g. diabetes, hypertension, epilepsy
- having difficulty in controlling drinking

3 Advise that if alcohol is consumed, intake should be limited – up to 1 drink per day for women and up to 2 drinks per day for men.
(1 drink is: 75-100 ml of standard wine [12%-13% alcohol] or 250 ml of standard beer [4% alcohol], 25 ml standard whisky 40% alcohol)
One standard drink is beer 250 ml or whisky 25 ml or wine 75-100 ml

STEP 3 ASSESS	Are you willing to reduce the harmful use of alcohol now? If 'yes' assist in preparing a plan. If 'no' stress the health hazards of alcohol again and ask the person to reconsider.
STEP 4 ASSIST	Assist in preparing a plan as follows: Ask the person to **1** Set a date **2** Inform family and friends and ask for their support **3** Remove alcohol products from the house **4** Avoid places that prompt him to take alcohol. **5** Arrange follow-up visit in one month **6** Give the self-care guide
STEP 5 ARRANGE	At follow up visit • Congratulate success • Reinforce message that abstinence from alcohol is good for health • If patient has relapsed, express empathy. • Consider referral to a doctor for more intensive follow-up

FLOWCHART A3

ADVICE ON PHYSICAL ACTIVITY

In humanitarian settings adhering to regular physical activity outdoors may be difficult.

Despite this, people should be encouraged to engage in at least 30 minutes of physical activity most days of the week (at least 150 minutes a week), if possible.

OFFER THE FOLLOWING ADVICE:

1 When possible take a walk outside during daylight.

2 Keep active by engaging in household chores such as:

- cleaning
- arranging furniture and belongings
- washing and drying clothes
- play with children
- cooking and preparing food

3 When working:

- Avoid sitting for more than 30 minutes continuously when possible
- Work in the standing position rather than in the sitting position
- Move the body and limbs as often as possible

4 Overweight may be prevented by reducing high calorie foods (such as sweets and food high in fat) and by engaging in regular physical activity

Utilize the self-care guide to explain.

FLOWCHART A4

ADVICE ON MAINTAINING A HEALTHY DIET

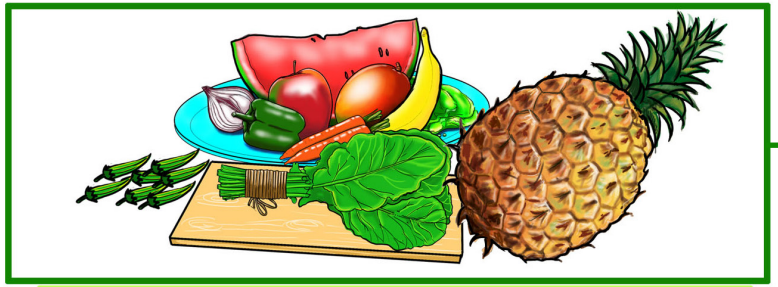
In humanitarian settings strict adherence to a healthy diet can be challenging. Nevertheless, it is advisable to follow some aspects of healthy eating.

ADVICE INCLUDES:

1. Avoid placing salt on the table
   - Reduce intake of salty foods e.g. pickles, salty fish, processed food, and canned food
   - Restrict use of salt to less than one level teaspoon (five grams) per day
2. Restrict sugary drinks
3. Eat five servings of fruits and vegetable per day, such as: Green leafy kales, spinach, cabbages, bananas, oranges, avocado, watermelon. (One serving is equivalent to one orange, apple, mango, banana or three tablespoons of cooked vegetables). Eat fruits and vegetables that are available and are in season.
4. Eat more plant-based food. They have more fiber and less saturated fat than animal-based food.
   - Unsalted nuts
   - Pulses or beans such as chickpeas and lentils
   - Whole grains such as wholemeal bread, bulgur, brown rice and oats, buckwheat and quinoa.
5. Limit fatty meat, dairy fat and cooking oil (less than two tablespoons per day)
6. Avoid trans-fat (e.g. cakes, biscuits, hydrogenated vegetable oil). Trans-fats or trans fatty acids, are a type of fat produced when hydrogen is added to liquid vegetable oil, like corn, soy, or cottonseed oil, to make it solid (e.g. shortening and margarine) through a process called hydrogenation.
7. Replace other meat with chicken (without skin)

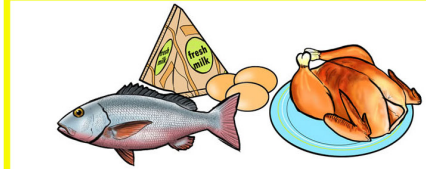
Use the self-care guide and images below to explain.

FLOWCHART A4
ADVICE ON MAINTAINING A HEALTHY DIET (continued)

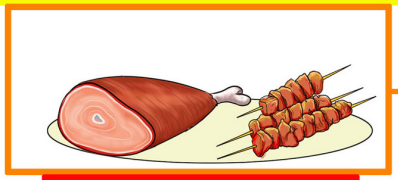


Generous daily intake of vegetables and fruits

Daily intake of whole grains, nuts, seeds, legumes and breads within limits

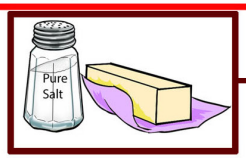


Limit fish, dairy products, eggs, 2-3 times a week



Limit beef and red meat to once a week

Restrict sweets, salt, processed food, sugary fizzy drinks and use of cooking oil



Avoid hydrogenated fat and adding salt on the table

KEY

Healthy food

Unhealthy food

FLOWCHART B

HYPERTENSION FOLLOW UP

FOLLOW UP VISIT WITH PEOPLE WITH HYPERTENSION

1 **ASK** Since your last clinic visit have you been troubled by any of the following:

Chest pain	**YES /NO**
Increased shortness of breath during exertion	**YES /NO**
Shortness of breath at night	**YES /NO**
Severe headache	**YES /NO**

If yes to any of the above advise to see the doctor

2 **ASK** the patient whether you can measure the blood pressure and follow the steps below:

- Person should sit quietly for at least five minutes and not be on the mobile phone.
- Back should be supported by the chair and feet flat on the ground.
- Support the arm at the level of the heart.
- The bladder of the cuff should encircle and cover two-third of the length of the bare arm, with bladder over the brachial artery.
- During each visit, take the average of at least two readings separated by a few minutes, this is the person's blood pressure.

3 GIVE THE SELF-CARE GUIDE TO ALL

Take action based on average blood pressure as shown below:

Blood pressure equal to or less than 140/90 mm Hg	Blood pressure above 140/90 and less than 160/100 mm Hg	If SBP 160 mm Hg and/or DBP 100 mm Hg and blood pressure less than 180/110 mm Hg	SBP 180 and/or DBP 110
Advise to continue same medications Counsel on healthy behaviors (see flowcharts A1 to A4, pages 83-89) Advise to keep next appointment	Find out whether patient has used medicines regularly as prescribed	Advise to see a doctor within a week Counsel on healthy behaviors (see flowcharts A1 to A4, pages 83-89)	Make arrangements to see a doctor as soon as possible
	Yes	No	
	Advise to see a doctor within 2 weeks Counsel on healthy behaviors (see flowcharts A1 to A4, pages 83-89)	Advise to use medicines as prescribed and see a doctor within 3 weeks Counsel on healthy behaviors (see flowcharts A1 to A4, pages 83-89)	

4 Check whether the following tests have been completed (Everyone with hypertension needs to have these tests conducted at least once at the time of diagnosis and once in 2-3 years thereafter).

Blood glucose	**YES /NO**	Blood cholesterol	**YES /NO**
Urine albumin	**YES /NO**	Electrocardiogram	**YES /NO**

If any of the above have not been done advise the patient to see a doctor to get them checked.

5 Provide counselling on healthy behaviors to all people with hypertension to help them reduce the risk of heart attacks and strokes, noting that hypertensive people in the following categories have a high cardiovascular risk.

- Older age (above 40 years)
- Smokers
- waist circumference (≥ 90 cm in women; ≥ 100 cm in men) (see below)
- known diabetes mellitus
- history of premature CVD in first degree relatives (below 55 years)

Measure waist circumference

- Ask the patient to take off clothes around the waist area (e.g. blouse jacket, coat, or belt).
- Ask the patient to stand straight with feet shoulder-width apart.
- Wrap the tape measure around the abdomen, against the skin, halfway between the bottom of lowest rib and top of hip bones (roughly in line with the umbilicus)
- Record waist measurement when the patient breathes out normally.

FLOWCHART C

SUPPORT FOR PEOPLE WITH EPILEPSY

ACTIONS CHW CAN TAKE TO SUPPORT MANAGEMENT OF EPILEPSY

1. Ensure that the patient understand the importance of adhering to approved to medicines (see Flowchart D on page 94)
2. Support self-care of patients with epilepsy by providing and explaining the content in the self-care guide
3. Provide first aid for epileptic seizures (see below)
4. Refer uncontrolled epilepsy patients for medical opinion

EPILEPTIC SEIZURE FIRST AID

FIRST AID FOR EPILEPTIC SEIZURES

- Stay with the person and remain calm.
- If they have food or fluid in their mouth, roll them onto their side immediately.
- Protect person from injury by placing something soft under their head.
- Loosen any tight clothing.
- Reassure the person until they recover.
- Observe and record the pattern of the seizure and time the seizure.
- Gently roll the person onto their side after the jerking stops aid drainage of any fluid in the mouth (see recovery position below).
- Call for medical assistance if
  - the seizure lasts for five or more minutes or if a second seizure quickly follows
  - the person has breathing difficulties after the jerking stops
  - it is the person's first known seizure
  - the seizure occurred in water

RECOVERY POSITION

FLOWCHART D

ADVICE TO PATIENTS WITH COMMON NCDS

ADVISE ALL PATIENTS LIVING WITH AN NCD TO:

- Adopt healthy behaviors (see Flowcharts A1 to A4, pages 83-89)
- Keep an adequate supply of prescribed medicines
- Use medicines as prescribed, even if there are no symptoms
- Maintain regular clinic appointments

ADVISE PATIENTS WITH HYPERTENSION TO:

- stop smoking;
- take medications daily as prescribed by the doctor even when blood pressure reading is normal
- reduce salt consumption to less than one teaspoon a day
- consume fruits and vegetables regularly
- attend clinic to get blood pressure checked as advised by the doctor

ADVISE PATIENTS WITH ASTHMA AND COPD TO:

- stop smoking
- avoid cigarette smoke and trigger factors for asthma, if known
- reduce dust in the surrounding environment as far as possible for example by using damp cloths to clean furniture, sprinkling the floor with water before sweeping and shaking and exposing mattresses, pillows, blankets to sunlight
- keep the area where meals are cooked well ventilated by opening windows and doors and if feasible avoid indoor cooking with firewood

ADVISE PATIENTS WITH DIABETES TO:

- give preference to low glycaemic-index foods (e.g. beans, lentils, oats and unsweetened fruit) as the source of carbohydrates in their diet
- avoid skipping meals if on insulin (as blood glucose may go down) and to carry sweets
- get blood glucose, blood pressure and urine checked regularly as advised by the doctor
- get eyes examined at the time of diagnosis and at least every two years thereafter

ADVISE PATIENTS TO TAKE SPECIAL CARE OF THEIR FEET:

- Avoid walking barefoot or without socks
- Wash feet in lukewarm water and dry well especially between the toes
- Not cut calluses or corns, and do not use chemical agents on them
- Look at feet every day and if there is any infection (painful, red, warm areas in any part of the foot) or injury, to seek medical help as soon as possible.
- Explain the importance of keeping an adequate supply of the medications
- Explain the need to take the medicines as advised even if there are no symptoms

PEN-H PART IV B

SELF-CARE GUIDES

CONTENTS

SELF-CARE

These self-care guides provide information on how to stay healthy and prevent NCDs. They can be used by healthy people as well as patients living with NCDs. Health workers can use them as aids when giving health education to people/patients.

SEVEN ACTIONS YOU CAN TAKE TO PREVENT HEART ATTACKS AND STROKES

1 Don't use any tobacco products.

2 Avoid harmful use of alcohol.

Alcohol does not promote health.

WOMEN: Avoid taking more than one standard drink per day.

MEN: Avoid taking more than two standard drinks per day.

3 Be physically active at least 30 minutes a day most days of the week (at least 150 minutes a week)

Take a brisk walk

Engage in household chores

- preparing food
- arranging furniture
- washing and drying clothes,
- cleaning
- playing with the children

- Move the body and limbs as often as possible
- Avoid sitting for more than 30 minutes continuously when possible
- Work in the standing position rather than in the sitting position

4 Maintain a healthy diet

Eat five servings of any type of fruits and vegetables daily

1serving = 1 orange
1serving = 1 apple
1serving = 1 mango
1serving = 1 banana

1serving = 3 tablespoons of cooked vegetables (NOT YAMS AND POTATOES)

Cut down on food high in:

Sugar – Sweet fizzy drinks

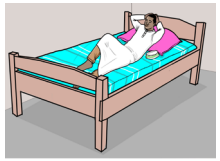
Salt – Salted chips, pickles

Fat – Super anjera, hydrogenated oil

5 Watch your waist and weight

If overweight, cut down on foods high in fat, sugar and starch

Try to reduce weight if, waist measurement is:
over 94 cm (about 37 inches), if you are a man
over 80 cm (about 31.5 inches), if you are a women



6 Take time to relax

7 Take regular health checks and know your numbers

Check Blood Pressure Healthy target: Blood Pressure 120/80 mm Hg

Check Bold Sugar Healthy target: Blood sugar up to 100 mg/d

Check Cholesterol Healthy target: Blood cholesterol less than 200 mg/dl

If you have been diagnosed with hypertension or diabetes

- Take medications regularly as prescribed.
- Take medications as prescribed, even when you have no symptoms.
- Keep regular clinic appointments.
- Check blood pressure, blood cholesterol and blood sugar and know your numbers

HOW TO RECOGNIZE A HEART ATTACK AND ACT IMMEDIATELY

You may have a heart attack if you have:

- severe crushing, unbearable chest pain
- usually at the center of the chest
- pain may go down the arms or go up the neck

Chest pain due to a heart attack may be associated with:

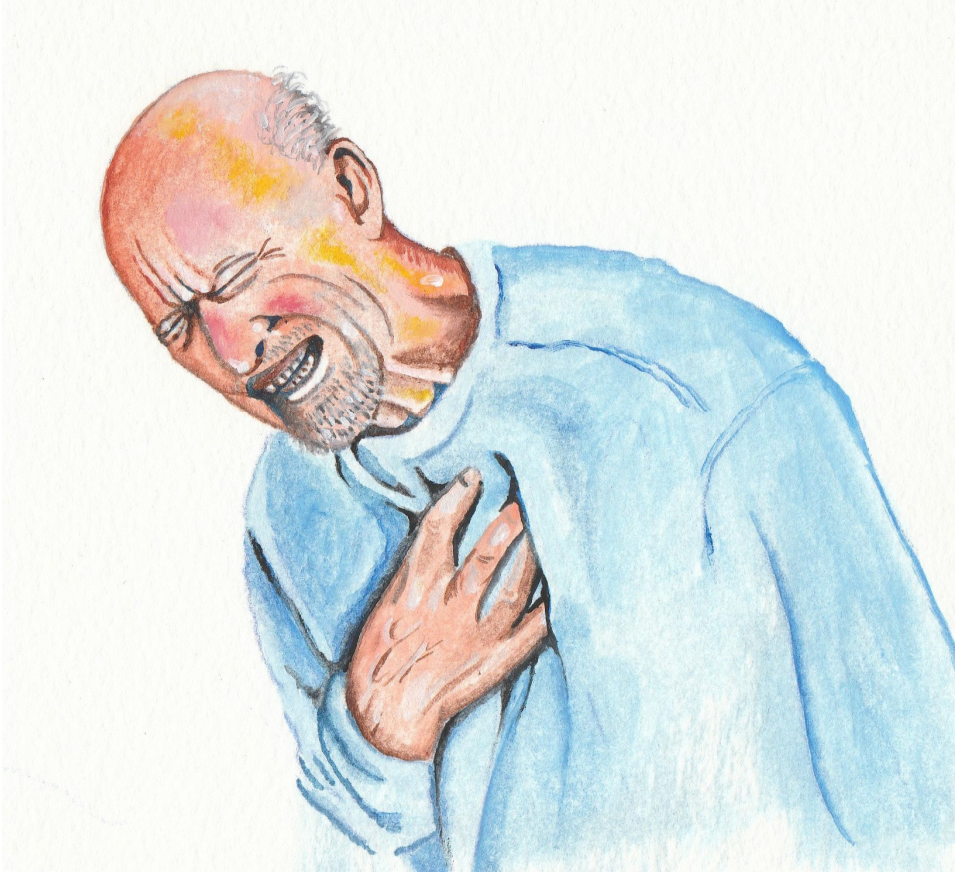
- difficulty in breathing
- feeling faint
- sweating
- Feeling sick or vomiting

Chest pain due to a heart attack may be associated with:

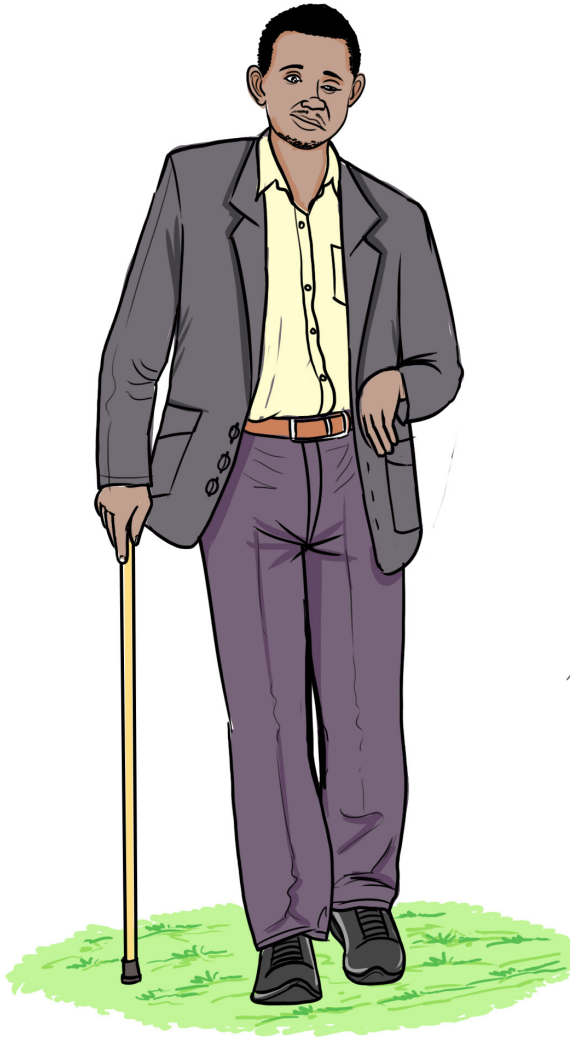
- difficulty in breathing
- feeling faint
- sweating
- Feeling sick or vomiting

Call an ambulance immediately

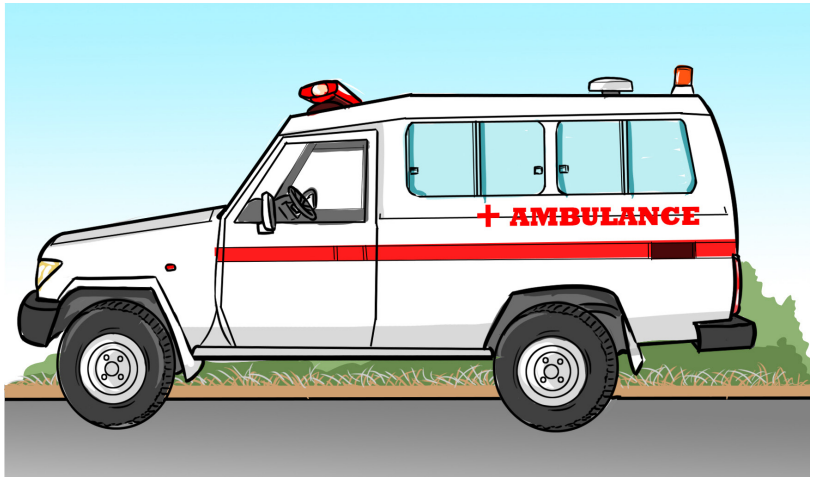
- Go to hospital
- See a doctor



HOW TO RECOGNIZE A STROKE AND ACT IMMEDIATELY



- **Face and mouth drooping on one side like a lopsided smile**
- Speech difficulty
- Sudden severe headache
- Confusion, inability to think clearly
- Arm and leg sudden weakness on one side
- Difficulty walking
- Call an ambulance
- Go to hospital
- See a doctor



SELF-CARE: LIVING WITH EPILEPSY

What causes epilepsy?

Every person has electrical activity in their brain.

Epilepsy is due to abnormal electrical activity in the brain.

To avoid seizures take medications regularly as prescribed by your doctor.

If you tend to forget, take the morning tablet after breakfast and night tablet after dinner.

Maintain a calendar and tick the box when you take the medicine.

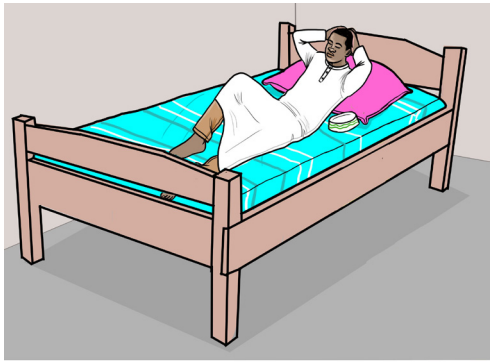
	MON	TUES	WED	THURS	FRI	SAT	SUN
MORNING							
EVENING							

Maintain a seizure calendar and tick the box to indicate the date and time you have a seizure.

	5/10/19	10/11/19			
MORNING					
EVENING					

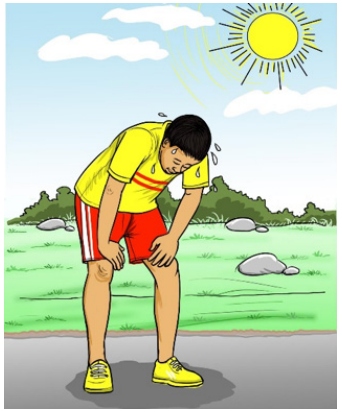
AVOID THE FOLLOWING TRIGGERS THAT CAN PROVOKE SEIZURES

Get enough sleep



Avoid skippings meals and drink plenty of water

Avoid sunlight



Avoid flashing lights and loud noises

Avoid alcohol

IN ORDER TO PREVENT INJURY, DURING A SEIZURE WHAT SITUATIONS SHOULD YOU AVOID?

Do not work near open fires

Avoid heights

Avoid water bodies

Avoid walking along railway lines

Avoid operating machinery

PEN-H PART V

CHECKLIST TO ASSESS FACILITY READINESS TO MANAGE NCDS IN HUMANITARIAN SETTINGS

DATE OF VISIT (D/M/Y)

COMPILED BY (LAST NAME/FIRST NAME)

SITE NAME

FACILITY ADDRESS/GIS COORDINATES

CLASSIFICATION OF FACILITY (HEALTH POST/HEALTH CENTER)

FACILITY ADMINISTRATION

Public ☐ Private ☐ Community managed facilities, Others ☐

1. ACCESS AND SECURITY

Road access	Building collapse	Fumes/Chemical	Access limitations due to security
Yes ☐	Yes ☐	Yes ☐	Yes ☐
No ☐	No ☐	No ☐	No ☐

Mobile Phone	Landline	Internet
Yes ☐	Yes ☐	Yes ☐
No ☐	No ☐	No ☐

2. HOST POPULATION IN THE CATCHMENT AREA ☐☐☐☐☐☐☐☐

3. DISPLACED POPULATION IN THE CATCHMENT AREA ☐☐☐☐☐☐☐☐

4. ACCESS TO REFERRAL

	Ambulance service	Access to next level of care
Yes	☐	☐
No	☐	☐

5. DISTANCE TO CLOSEST NEXT LEVEL HEALTH FACILITY (KILOMETERS) ☐☐☐

6. NUMBER OF DAYS PER WEEK THE FACILITY IS OPEN ☐☐

7. NUMBER OF NCD PATIENTS ALREADY RECEIVING TREATMENT AT THIS FACILITY ☐☐

8. NUMBER OF PATIENTS EXPECTED (BASED ON WHO GUIDANCE FOR NUMBER OF HYPERTENSION AND DIABETES PATIENTS) ☐☐

HUMAN RESOURCES

9. ARE HUMAN RESOURCES AVAILABLE FOR MANAGING NONCOMMUNICABLE DISEASES?

CATEGORY	NUMBER PRESENT TODAY	REASONS FOR ABSENTEEISM	NUMBER DIRECTLY AFFECTED BY THE CRISIS (DEAD/INJURED/ILL)
Specialist doctors			
General/family doctors/physicians			
Clinical officers			
Nurse practitioners			
Nurses			
Community health workers/health Educators			
Dispensers			
Laboratory technician			
Others, specify:			

10. ARE COMMUNITY HEALTH NETWORKS PRESENT? Yes ☐ No ☐

11. ARE HEALTH WORKERS TRAINED IN MANAGEMENT OF NONCOMMUNICABLE DISEASES?

CATEGORY	TRAINING NEEDS ASSESSED (YES/NO)	IS REGULAR TRAINING CONDUCTED (IF YES, HOW OFTEN?)	WHEN DID THE MOST RECENT TRAINING TAKE PLACE? MONTH/YEAR	WHICH TOPICS WERE COVERED IN THE MOST RECENT TRAINING?	NOT TRAINED
Doctors					
Clinical officers					
Nurse practitioners					
Nurses					
Community health workers					

PROTOCOLS AND MATERIALS

12. CHECK FOR AVAILABILITY OF NCD PROTOCOLS FOR EACH CONDITION

TOPIC	IS A CLINICAL PROTOCOL AVAILABLE AT THE FACILITY TODAY? (YES/NO)	ARE PROVIDERS USING THE PROTOCOL?
Cardiovascular diseases		
Hypertension		
Diabetes		
Epilepsy		
Asthma		
Chronic Obstructive Pulmonary Disease		
Other		

13. CHECK FOR AVAILABILITY OF INFORMATION, EDUCATION, AND COMMUNICATION (IEC) MATERIALS FOR NCDS AND THEIR RISK FACTORS:

TOPIC	IEC MATERIALS AVAILABLE TODAY? (YES/NO)	ARE PROVIDERS USING THE IEC MATERIALS? (YES/NO)
Cardiovascular diseases		
Hypertension		
Diabetes		
Epilepsy		
Asthma		
Chronic Obstructive Pulmonary Disease		
Physical activity		
Healthy diet		
Tobacco cessation		
Alcohol		

EQUIPMENT

14. ARE THE FOLLOWING BASIC EQUIPMENT AVAILABLE?

	NUMBER OF FUNCTIONAL DEVICES
Core Items	
Stethoscope	
Sphygmomanometer (blood pressure meter)	
Weighing machine	
Measuring tape	
Thermometer	
Glucometer	
Peak flow meter	
Refrigerator for storage of cold chain medicines (insulin)	
Expanded	
Spacers for inhalers	
Tuning fork/monofilament	
ECG machine	
Opthalmoscope	
Pulse oximeter	
Cholesterol measurement	
Nebulizer	
Oxygen cylinders	
Suction machine	
Ambu bag	

BASIC PROCEDURES/TESTS

15. CAN THE FOLLOWING PROCEDURES/TESTS BE DONE AT THE FACILITY WHEN NEEDED?

PROCEDURE	YES	NO	IF NO, WHY NOT
Administration of IV fluids/ IV injections			
Intramuscular injections			
Administration of oxygen via mask or tube			
Cardioplumonary resuscitation			
Manual ventilation with Ambu bag			
Electrocardiography			
Examination of feet for neuropathy			
Funduscopic eye exam			
Peak flow rate measurement			
Nebulization			

16. CAN THE FOLLOWING TESTS AND ASSESSMENTS BE PERFORMED?

PROCESS/INVESTIGATION	YES AT THIS FACILITY	YES AT REFERRAL FACILITY	NO
Triage of severely ill patients			
Cardiovascular risk assessment using charts			
Urine glucose (test strips)			
Blood glucose (test strips)			
Urine albumin (test strips)			
Blood cholesterol (test strips)			
Blood glucose (lab assay)			
HbA1c			
Urine ketone bodies			
Blood cholesterol (lab assay)			
Lipid profile			
Blood counts			
Serum electrolytes			
Serum creatinine			
Cardiac enzymes			
Troponin			
Urine Microalbumin			

MEDICINES

17. ARE THE FOLLOWING MEDICINES AVAILABLE ?

	AVAILABLE ON MOST DAYS DURING THE LAST 90 DAYS	AMOUNT AVAILABLE TODAY	NOT AVAILABLE
Adrenaline (epinephrine)injection 1 mg/ml			
Acetylsalicylic acid tablets 75-100 mg			
Amlodipine tablets 5 mg			
Beclomethasone inhaler 100 mcg/dose			
Bisoprolol tablets 5 mg			
Carbamazepine tablets 200 mg			
Diazepam injection 5 mg/ml			
Enalapril tablet 5 mg			
Furosemide injection 10 mg/ml			
Furosemide tablets 40 mg			
Gliclazide tablets 80 mg			
Glibenclamide tablets 5 mg			
Glucagon injection 1 mg/ml			
Glyceryl trinitrate oral spray 0.4 mg/dose			
Glucose 50% injectable solution			
Glucose 5% injectable solution			

17. ARE THE FOLLOWING MEDICINES AVAILABLE ? (continued)

	AVAILABLE ON MOST DAYS DURING THE LAST 90 DAYS	AMOUNT AVAILABLE TODAY	NOT AVAILABLE
Hydralazine powder for injection 20 mg			
Hydrochlorothiazide tablets 25 mg			
Hydrocortisone injection 100 mg			
Insulin intermediate-acting injection 100 IU/ml (10m vial)			
Insulin soluble injection 100 IU/ml (10 ml vial)			
Metformin tablets 500 mg			
Morphine injection 10 mg/ml			
Morphine tablets 10 mg			
Phenytoin tablets 100 mg			
Phenobarbital tablets 50 mg			
Prednisolone tablet 5 mg			
Salbutamol inhaler 100 mcg/dose			
Saline 0.9% injectable solution			
Simvastatin tablets 10 mg			
Valproate tablets 200 mg			
Water for injection			

18. WHICH OF THESE SOURCES SUPPLY MEDICINES?

MINISTRY OF HEALTH	☐
NONGOVERNMENTAL ORGANIZATIONS	☐
OUT OF POCKET PURCHASE FROM PRIV ATE SECTOR	☐
OTHER	☐

HEALTH INFORMATION

19. WHAT SYSTEM DOES THE FACILITY USE TO MAINTAIN PATIENT RECORDS?

No records	☐	
Registry	☐	
Patient held cards	☐	
Paper files/cards/ records	☐	
Electronic records	☐	
Other	☐	Specify:

20. CAN RECORDS BE RETRIEVED AND CONSULTED EACH TIME A PATIENT VISITS THE FACILITY?

Yes	☐
No	☐

21. IS THERE A FILING CABINET OR A CUPBOARD THAT CAN BE LOCKED FOR KEEPING THE FILES?

Yes	☐
No	☐

22. IS AN APPOINTMENT SYSTEM USED FOR FOLLOW UP VISITS

- Yes ☐
- No ☐

23. DOES THE FACILITY HAVE STOCK CARDS OR LOG BOOKS FOR:

A) MEDICINES

- Yes, but not used routinely ☐
- Yes, used routinely and currently up to date ☐
- No ☐

B) CONSUMABLES (E.G. SYRINGES, BANDAGES)

- Yes, but not used routinely ☐
- Yes, used routinely and currently up to date ☐
- No ☐

FINANCING AND ADMINISTRATION

24. DO PATIENTS PAY FOR ANYTHING AT THE HEALTH FACILITY?

- Yes ☐
- No ☐

25. IF YES, PLEASE TICK SERVICES THEY PAY FOR

- Consultations ☐
- Laboratory/ diagnostics ☐
- Medicines ☐
- Equipment ☐

COMMUNITY LINKS

26. ARE THERE ANY COMMUNITY ACTIVITIES TO SUPPORT NONCOMMUNICABLE DISEASE/HEALTH SERVICES PROVIDED AT THIS PRIMARY HEALTH CARE FACILITY?

Yes ☐

No ☐

If “yes”, specify: (e.g. vehicle for patient transfer is provided for free by the community, patient support groups, support to manage shelters, food preparation in shelters)

.....

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LIST OF SOURCES AND PERMISSIONS

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1. Poster - Staying Healthy is as easy as ABCDE http://www.searo.who.int/entity/noncommunicable_diseases/advocacy/new-school-toolkit-abcd-poster.pdf

2. Global report on diabetes 2016. Geneva: World Health Organization 2016

3. Implementation tools: package of essential noncommunicable (WHO-PEN) disease interventions for primary health care in low-resource settings . Geneva: World Health Organization

4. Avoiding Heart Attacks and Strokes 2005. Geneva, World Health Organization.

5. A Global Brief on Hypertension 2013. Geneva, World Health Organization.

6. Affordable Technology 2005. Geneva, World Health Organization

7. Guideline for Diagnosis and Management of Type 2 Diabetes Mellitus in primary health care in low-resource settings. Geneva, World Health Organization 2013

8. World Health Organization Model Formulary. Geneva, World Health Organization 2008

9. Guideline for Management of asthma and chronic obstructive pulmonary disease in primary health care in low-resource settings. Geneva, World Health Organization 2013

10. World Health Organization. Epilepsy Fact Sheet. Geneva World Health Organization.

11. World Health Organization. mhGAP Intervention Guide for Mental, Neurological and Substance Use Disorders in Non-Specialized Health Settings: Mental Health Gap Action Programme (mhGAP): Geneva

12. Manual for the health care of children in humanitarian emergencies. Geneva: World Health Organization; 2008

13. World Health Organization poster High blood pressure you can prevent it.

14. World Health Organization. Health promotion posters.

15. Photographs from the World Health Organization photo library

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