



**United Republic of Tanzania
Ministry of Health and Social Welfare**

And

Tanzania Diabetes Association



**Cardiovascular Disease, Type 2 Diabetes, Obesity,
Cancer, Chronic Obstructive Pulmonary Disease
and Hyperlipidaemia Care**

Case Management Training Modules

April 2014

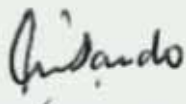
FOREWORD

Worldwide, Non Communicable Diseases currently represent 43% of the burden of disease and are expected to be responsible for 60% of the disease burden and 73% of all deaths by year 2020. Most of this increase will be accounted for by emerging non communicable diseases epidemics in developing countries according to World Health Organization.

Like in other countries, in Tanzania there is a concern and growing evidence of escalating burden of the main types of Non Communicable Diseases, these are cardiovascular diseases, cancer, diabetes and chronic respiratory diseases. The concern is not just health related but also economic because Non Communicable Diseases are often accompanied by long standing disabilities which cause direct economic impact on households and communities both through the uptake of health services and goods that diverts expenditure, and also impact on levels of income or labour productivity.

The Ministry of Health and Social Welfare in collaboration with other partners are committed in addressing the menace caused by non communicable diseases by developing effective prevention strategies and targeted interventions in order to arrest the ever growing epidemic. Development of this training manual is one such intervention strategy that seeks to address the challenges faced by health care providers when addressing non communicable diseases in our hospital settings.

This manual includes tested measures, both curative and preventive, and has been adapted for use by our primary health care providers in the Tanzanian setting. It should thus facilitate prevention, early detection and quality care for people with Non Communicable Diseases at all levels of care.



DR. DONAN W MMBANDO
CHIEF MEDICAL OFFICER

ACKNOWLEDGEMENTS

This Training manual is collaborative effort of the Ministry of Health and Social Welfare and Tanzania Diabetes Association with funding from the World Diabetes Foundation under the National Diabetes Program.

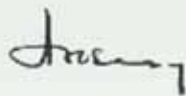
The Ministry of Health and Social Welfare would like to acknowledge and express its special gratitude to the members of staff of the Non Communicable Diseases section of the Ministry of Health and Social Welfare and specifically Dr Ayoub Magimba for his continuous support. Special thanks and gratitude should also be accorded to the Health Promotion and Education Unit under Ms Helen Semu for her dedication and commitment during the development of this manual.

The Ministry would also like to recognize the strong support from Prof. Andrew Swai and Dr, Kaushik Ramaiya of the Tanzania Diabetes Association who took care of all the compilations and editorial aspects.

Many people (participants and facilitators) contributed to the production of this manual and provided valuable inputs through their comments in an earlier version of this production used in a pilot training in the Lake Zone. We thank them all.

A generic version of this manual was produced in collaboration with Leeds University, UK, and we acknowledge the leadership of Prof. John Walley and Dr. Kirti Kain towards that initial output.

Lastly, special thanks and gratitude should go to the World Diabetes Foundation for funding this work and for their entire support during the implementation of the National Diabetes Program in Tanzania.



DR. Ahadiel R Senkoro
Ag. Director Curative Services

CONTENT

Goals & Objectives of Training	1
How to use the training module and desk guide	3
Communication skills	6
Introduction to CVD, diabetes, COPD and Cancers	11
Who to screen for diabetes	22
Examine the patient	25
Diagnosing NCD and Diabetes	29
Prescribe Diabetes Treatment	38
Fill Forms, Cards and Register	42
Diabetes and Tuberculosis	48
Diabetes and Pregnancy	52
Educate Patients and Family Members	57
Supervision and Support of Treatment	67
Patient Follow –Up at Treatment Centre	74
Managing Patients Who Interrupt Treatment	87
Other Management Issues	92
Definitions, Diagnosis of Diabetes and Insulin Types	93
Answers to Written Exercises	96

Abbreviations

ACEI	Angiotensin Converting Enzyme Inhibitor
AIDS	Acquired Immunodeficiency Syndrome
AMO	Assistant Medical Officer
ARB	Angiotensin Receptor Blocker
ART	Antiretroviral Treatment
BD	Twice Daily
BMI	Body Mass Index
BP	Blood Pressure
CO	Clinical Officer
COPD	Chronic obstructive pulmonary disease
CVD	Cardiovascular Disease
DOB	Date of Birth
ECG	Electrocardiogram
ECHO	Echocardiogram
FBG	Fasting Blood Glucose
FEV	Forced Expiratory Volume
GDM	Gestational Diabetes Mellitus
HBA1C	Haemoglobin A1C
HBGM	Home Blood Glucose Monitoring
HIV	Human Immunodeficiency Virus
HT	Height
IDF	International Diabetes Federation
IMAI	Integrated Management of Adolescent-adult Illness
NCD	Non Communicable Disease
OD	Once Daily
OGTT	Glucose Tolerance Test
OPD	Outpatient Department
PCP	Pneumocystis Pneumonia
RBG	Random Blood Glucose
SSA	Sub Saharan Africa
TB	Tuberculosis
TDS	Three times a day
WDF	World Diabetes Foundation
WHO	World Health Organization
WT	Weight

Goals & Objectives of Training

The guidelines are aimed at achieving effective and equitable prevention and care for major non-communicable diseases (NCDs).

Goals

To reduce the burden, health-care costs and human suffering due to major NCDs by achieving higher coverage of essential interventions.

- a) To support early detection, community engagement and self care.
- b) To achieve universal access to high-quality diagnosis and patient-centred treatment
- c) To provide effective and affordable prevention and treatment through primary care
- d) To reduce the suffering and socioeconomic burden associated with major NCDs
- e) To protect poor and vulnerable populations from heart disease and hypertension, stroke, cancer, diabetes and chronic respiratory disease.

Objectives

- a) Improve the **equity and efficiency** of care of major NCDs in primary care through:
 - provision of cost effective interventions based on need rather than ability to pay;
 - targeting limited resources to those who are most likely to benefit due to high risk;
 - standardization of diagnostic and investigation procedures and drug prescription;
 - formulation of referral criteria for further assessment or hospitalization;
 - selection of monitoring and evaluation indicators.
- b) Improve the **quality** of care of major NCDs in primary care through:
 - prevention, early detection;
 - cost effective case management;
 - appropriate referral and follow-up;
 - management of exacerbations and emergencies;
 - Monitoring of complications
 - follow-up of long-term treatment prescribed by the specialist;

c) Have a beneficial **impact on health** through:

- reduction of tobacco consumption in all patients;
- reduction of the average delay in the diagnosis of NCD by the health services;
- reduction of the risk of heart attacks, strokes, amputations and kidney failure;
- reduction of case fatality of major NCDs;
- prevention of acute events and complications;
- prolongation of stable clinical periods for CVDs, diabetes, and COPD patients.
- Capacity strengthening for health system research and training

Desk Guide Objectives

After reading this guide, the primary health care worker should be able to at least:

- a) Communicate preventive health education messages and counsel individuals on regular physical activity, healthy diet, and harmful effects of alcohol and tobacco
- b) Diagnose, treat and appropriately refer patients with major NCDs (cardiovascular disease, diabetes mellitus, chronic obstructive pulmonary disease (COPD) and cancers of breast, cervix and prostate);
- c) Collect and report essential data for monitoring and evaluation.

Health workers should:

- a) give brief individual counselling for cessation of tobacco and harmful use of alcohol at each contact when a smoker or heavy alcohol drinker attends a health facility.
- b) Involve and encourage family members to help people to adopt healthy living, e.g. cessation of tobacco and alcohol and taking regular physical activity.
- c) Enquire of all clinic attendees over 40 years the main symptoms of the major NCDs and appropriately manage them.

How to use the training module and desk guide

This **module** is for the basic training of health workers (doctors, clinical officers, AMO's and nurses) providing routine care in health centres or the district level hospital Out Patient Departments (both government, NGO/mission and private facilities). It is also for nurse assistants and counsellors who provide health education. The module teaches how to provide essential NCD care; using the desk guide which is a concise "quick reference" guide. It informs as to recording details on treatment cards and register. There is also a brief section on how to communicate effectively with patients.

Throughout the course you will develop the knowledge, skill and attitudes necessary to fulfil your role in a community-based NCDs management programme. Your role is to detect, manage and support patients with NCDs.

The course has few sections to study. It contains the essential information needed to fulfil your role. We will refer you to the relevant sections in the desk guide for practice. You will have the chance to practise all the skills necessary to do your job. You will complete written exercises, practical cases, role-plays and group discussions. The facilitator will be available to answer your questions and guide discussion.

The course is on the identification and care of people with NCD i.e. cancers, diabetes *and* associated conditions such as hypertension, obesity and high lipids. Such care is complicated. The user-friendly **desk guide** is an "at a glance" reference tool for daily work and includes steps for screening subjects, diagnosis and management of people with uncomplicated type 2 diabetes mellitus (diabetes), hypertension, obesity and high lipids (which are linked conditions) and smoking. It is designed to fit with the local health service context, and considers social factors including identification of treatment supporters and defaulter tracing.

The majority of diabetes care should be delivered in the community. The desk guide will help all health workers to understand the complete process of care. It has been developed to be compatible with the International Diabetes Federation (IDF) clinical guidelines for sub Saharan Africa and WHO.

The desk guide should be kept in front of you, next to your patient records. This way you can easily see it as you look down to write your notes, without distracting the communication. The guide should be used as a reminder. It is best not to ask questions from memory, as you are very likely to forget important points. The desk guide follows the step by step process of delivering diabetes from the presenting symptoms to control of blood glucose, blood pressure, weight, and lipids.

The sections of desk guide are ordered according to this process as follows:

1. Identify and screen for NCD
2. Diagnosis of diabetes
3. Registration and initial management
4. Education of patient
5. Signs and treatment of hypoglycaemia
6. Communication with patients and family
7. Role of treatment support
8. Follow up visits
9. Diabetes control
10. Blood pressure control
11. Weight control
12. Lipid control
13. Stop smoking
14. Managing treatment interruption

The desk guide describes different phases of management (without medication, with medication and not controlled) for all risk factors (blood glucose, BP, lipids, obesity, smoking).

These are an interim desk guide and module for use in resource-limited settings. They are freely available for adaptation to country health/ service contexts, the availability of drugs, tests (and units) through collaborative efforts of national and international experts. If not adapted, then refer to national guidelines in conjunction with this desk guide. These interim guidelines will be revised based on early implementation experience. Please send comments to: tdassociation@gmail.com.

Most patients can be managed at the nearby health unit, where the health workers treat the common, uncomplicated diabetes and other NCD. Those with poor control or serious complications will require referral to the district hospital and assessment by a more senior clinician. However once stable, they may then be referred back with a care plan for follow-up at the nearest health unit.

For more information see [http://](http://www.worlddiabetesfoundation.org/media(7142,1033)/WDF02007_Clinical_practice_guidelines_English.pdf)

[www.worlddiabetesfoundation.org/media\(7142,1033\)/WDF02007_Clinical_practice_guidelines_English.pdf](http://www.worlddiabetesfoundation.org/media(7142,1033)/WDF02007_Clinical_practice_guidelines_English.pdf).

http://www.who.int/cardiovascular_diseases/guidelines/hypertension_guidelines.pdf

House Rules

In order to ensure that the training sessions run smoothly and to make the most of the course we need to agree on some “rules”. We propose:

- ❖ Observing time i.e.
 - Punctuality (starting on time)
 - Ending the training day at the agreed time
 - A coffee/tea break of 15 minutes, and 1 hour for lunch
- ❖ Switching off cell phones during the training session
- ❖ Not attending to visitors during training session
- ❖ Not leaving the room unnecessarily during training session

DISCUSS AND AGREE ON “RULES”

During the course the following images will be used to identify role-play, discussions, and written exercises:



Role play exercises



Written exercises



Discussions

Group discussions allow us to share our experiences and to learn from one another. Your own small group may have had a useful learning experience to share with everyone. When contributing to general discussion and giving feedback, there is no need to refer to the individual members of your group by name. It is better to introduce your comment with a statement such as:

“One member of our group had difficulty noticing the nervousness and anxiety of the patient. On discussion we felt that this was partly because....”

❖ **DISCUSS WITH THE FACILITATOR TO CLARIFY POINTS. THEN CONTINUE.**

Role Plays are particularly useful to improve clinical interview and communication skills, which are so important in chronic diseases such as diabetes. Feedback within these groups should start with the positive points, and diplomatically adding “what could have been added/ said”. Unless told otherwise, the above applies to all role plays.

Communication skills

Learning objective

To learn how to use effective communication in identifying and caring for people with chronic non communicable diseases and associated conditions.

Effective Communication

Effective communication is vital at several stages of diabetes and other chronic diseases care process and is essential to good quality care. Good communication is needed to obtain the information about symptoms and to get across information about the diagnosis and care. Clear, correct and complete information is vital for diagnosis and identification of complications.

We may not be aware that there are communication barriers in our practice. It is important that we remove these barriers and concerns, and so enable patients to talk freely. Then the health worker will obtain the required information for diagnosis. They will effectively communicate the information which is essential for adherence to treatment and appointments. A person is more likely to persevere with their treatment if they know what their diagnosis is, knows why treatment is life long, and understands the dangers of stopping treatment. The way these issues are discussed can directly affect how a patient acts.

Patients feel awkward and vulnerable when they are ill and seeking help. This can make them lose confidence and render them unable to explain their problem. Some patients with diabetes are poor, lacking in education and may feel intimidated by health workers. They are reluctant to ask questions if they do not understand. Patients may stop taking treatment early if the health workers are rude and unsympathetic. This behaviour will make a patient reluctant to return for review. If our quality of care is low, patients may turn to traditional healers or buy medicines from “quack” doctors to treat themselves, which in turn can lead to poor diabetes and cardiovascular control.

For these reasons it is important to communicate “WELL”.

COMMUNICATING “W.E.L.L”

W = *Welcome your patient*

- Ensure privacy and confidentiality
- Greet the patient (for example: “hello Mr/Mrs... please come in”)
- Offer a seat
- Ask their name
- Show empathy (I understand how you feel)

E = *Encourage your patient to talk*

- Ask general questions "what is your problem", "Tell me your concerns"
- Allow your patient to answer
- Nod, agree or say "tell me more about that" to help your patient explain

L = *Look at your patient*

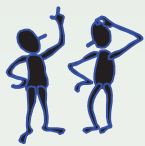
- Make sure that your facial expression is warm and friendly
- Maintain eye contact with your patient as they speak
- Observe their feelings, as well as their general medical condition

L = *Listen to your patient*

- Listen carefully to what your patient has to say. Do not interrupt them.
- Show the patient you are interested in what they are saying.

To remember some of these ideas memorize the acronym: WELL. Apply this in your daily consultations with patients.

Facilitator Role Play 1: Examples of good and bad communication



Now the facilitators will do a role play. Participants act as *observers* and write down five main communication barriers that they observe.

Effective Communication

Interviews conducted with patients require good communication skills because patients are often:

- Worried about the cause of diabetes, whether the illness can be cured (it can't) and how it can be controlled;
- Embarrassed by the social stigma of diabetes;
- Afraid? Or worried about confidentiality;
- Worried about the attitude of the health worker;
- Concerned about being overheard.

When asking about symptoms it is important to start with open questions at least for the first "golden" minute. Golden because it is gold in terms of getting to know the symptoms and concerns of the patient. Later as necessary you can ask closed questions. For example, careful, non-leading questions about weight loss are important. If a patient mentions they have "lost weight", you may ask an open question such as "tell me more about your weight". Similarly if they mention poor eye sight, you may say "You mentioned poor eye sight, tell me about this"; If this doesn't give you the information that you need, for example the duration of weight loss, then ask a more specific open question such as "how long have you been losing weight (or had poor eye sight) ?" If this doesn't get a clear answer you may need to ask a closed question but with alternatives, such as "... has this been over weeks, months or longer?", and/or ask "did your weight loss start before or after (a locally appropriate event or date)?"



Two Stages to Effective Communication

1. The health worker must be open and receptive to the feelings and attitudes of the patient; be an active listener. Imagine a patient who is waiting to hear test results about a serious disease. An effective communicator will notice that the patient is both anxious about the result and worried that others might overhear what is being said.
2. The health worker must be able to respond appropriately. In the above situation the effective communicator will say some words to acknowledge the patient's feelings and ensure that the results are given privately, without interruption and with follow up and management arranged.

This is called showing empathy. The health worker should try to remember the feelings expressed by their patients and realise that others may have similar emotions.

WRITTEN EXERCISES 1



This is a quick exercise to see if we can recognise different types of questions used in consultations and interviews. For each question listed below, decide if it is:

- A. An open question
- B. A closed question
- C. A leading question

Open questions have no fixed answers and the patient can answer the question in his/her own way. Closed questions are phrased very specifically requiring yes and no answers. The problem with closed questions is that some patients may answer closed questions in the way they think you want to hear. Leading questions are often answered inaccurately and should be avoided.

QUESTIONS

1. Tell me about your problems.
2. You are no longer feeling sick with the tablets now are you?
3. Tell me, how have you been since your last visit?
4. You were feeling ill at the last visit, and I changed the tablet - you're feeling better now, yes?
5. You said you have had urine trouble, tell me more about that?
6. You've had weight loss, is it for a month?

Mark A for open, or B for closed, or C for a leading question against the questions above.

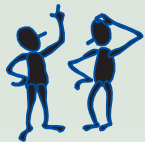
See answers provided. However, if you disagree with the answers discuss with your colleagues and facilitator.

Always start taking a history with open questions and only if necessary move to more closed questions. With open questions patients can express their symptoms and concerns in their own words. Closed questions can be used later in the consultation if the patient does give the essential information through open questions; but beware that some patients may answer closed questions in the way

they think you want to hear. Avoid leading questions. In all stages of care good communication in simple understandable language is essential. Good communication helps in correct diagnosis, patient friendly care and better compliance.

By communicating well, we can improve a patient's understanding of their problem so that they are more likely to comply with treatment and control their blood glucose, lipids, weight and blood pressure. We will practice these communication skills during the course exercises when we practice the various roles of the health worker in the diabetes management programme. Continue to practice these skills in your daily work.

Facilitator Role Play 2: Examples of good and bad communication



Now the facilitators will do another role play. Participants act as *observers* and write down five good communication aspects that they observe.

KEY POINTS

- ❖ There is failure to identify patients with NCD like diabetes, hypertension, New strategy is needed to solve this problem
- ❖ The IDF has standardised guidelines for diagnosis and treatment. This will be implemented by means of NCD desk-guide
- ❖ The desk guide deals with diabetes, associated conditions, and the risk factors for these
- ❖ Every worker needs to understand the overall holistic approach to a person with NCD like diabetes and understand the role they will play in this process.
- ❖ Good communication skills are essential for diagnosing and managing patients through all stages of care, most especially so at the initial visit.
- ❖ Good communication is two way dialogue between clinicians (doctors, paramedics, nurses) and patients
- ❖ The principles of good communication can be summarised under the acronym WELL:
 1. Welcome your patient
 2. Encourage your patient to talk
 3. Look at your patient
 4. Listen to your patient

	Introduction to Non Communicable Diseases CVD, diabetes, COPD and cancers
--	----------------------------------------------------------------------------------

This session will include:

- A background to CVD, diabetes, COPD and cancer disease process
- How care for NCDs is organised.

The risks of NCD's

Non-communicable diseases, including the linked conditions of hypertension, heart disease, diabetes and stroke, along with injuries, accounted for a ¼ of the total combined deaths and ill health in Africa in 2001, and they are on the rise. Between 1 – 8% of people have diabetes in rural- urban sub Saharan Africa.

Type 2 diabetes mellitus (diabetes) used to be less common. As diets have changed, people are less active, and obesity more common (even in fairly poor people in urban areas) - now its prevalence is increasing. It is a life-long chronic condition. In Africa at the time of diagnosis up to half will have kidney disease and a ¼ with have visual problems. The risk of early death amongst patients with diabetes is at least double that of without diabetes (unless well controlled). In Africa 50% of people with diabetes die of cardiovascular diseases (heart disease and stroke) and 10-20% from renal complications.

Cardiovascular diseases (CVD)

CVDs are the number one cause of death globally. More people die annually from CVDs than from any other cause. An estimated 17.1 million people died from CVDs in 2004, representing 29% of all global deaths. Of these deaths, an estimated 7.2 million were due to coronary heart disease and 5.7 million were due to stroke. By 2030, almost 23.6 million people will die from CVDs, mainly from heart disease and stroke. These are projected to remain the single leading causes of death. <http://www.who.int/mediacentre/factsheets/fs317/en/index.html>

Low- and middle-income countries are disproportionately affected: 82% of CVD deaths take place in low- and middle-income countries and occur almost equally in men and women.

Cardiovascular diseases (CVDs) are a group of disorders predominantly affecting the heart and blood vessels and include: coronary heart disease – disease of the blood vessels supplying the heart muscle, cerebrovascular disease - disease of the blood vessels supplying the brain, peripheral arterial disease – disease of blood vessels supplying the arms and legs.

Heart attacks and strokes are usually acute events and are mainly caused by a blockage that prevents blood from flowing to the heart or brain. The most common reason for this is a build-up of fatty deposits on the inner walls of the blood vessels that supply the heart or brain. Strokes can also be caused by bleeding from a blood vessel in the brain or foreign bodies from other parts of the body (e.g. blood clots).

Risk factors for cardiovascular disease

The most important behavioural risk factors of heart disease and stroke are unhealthy diet, physical inactivity and tobacco use. Behavioural risk factors are responsible for about 80% of coronary heart disease and cerebrovascular disease.

Tobacco is the leading global cause of preventable death and kills nearly 6 million people each year with the majority of these premature deaths occurring among people living in low- and middle-income countries. Tobacco kills one in two of its long-term users. More deaths are caused each year by tobacco use than by the combined number of deaths from human immunodeficiency virus (HIV), illegal drug use, alcohol use, motor vehicle injuries, suicides, and murders combined.

The effects of unhealthy diet and physical inactivity may show up in individuals as raised blood pressure, raised blood glucose, raised blood lipids, and overweight and obesity; these are called 'intermediate risk factors'.

There are also a number of underlying determinants of CVDs, or, if you like, "the causes of the causes". These are a reflection of the major forces driving social, economic and cultural change – globalization, urbanization, and population ageing. Other determinants of CVDs are poverty and stress.

Common symptoms of cardiovascular diseases

Symptoms of heart attacks and strokes

Often, there are no symptoms of the underlying disease of the blood vessels. A heart attack or stroke may be the first warning of underlying disease. Symptoms of a heart attack include:

- pain or discomfort in the centre of the chest;
- pain or discomfort in the arms, the left shoulder, elbows, jaw, or back.

In addition the person may experience difficulty in breathing or shortness of breath; feeling sick or vomiting; feeling light-headed or faint; breaking into a cold sweat; and becoming pale. Women are more likely to have shortness of breath, nausea, vomiting, and back or jaw pain.

The most common symptom of a stroke is sudden weakness of the face, arm, or leg, most often on one side of the body. Other symptoms include sudden onset of: numbness of the face, arm, or leg, especially on one side of the body; confusion, difficulty speaking or understanding speech; difficulty seeing with one or both eyes; difficulty walking, dizziness, loss of balance or coordination; severe headache with no known cause; and fainting or unconsciousness.

People experiencing these symptoms should seek medical care immediately.

Diabetes

Diabetes results from abnormal metabolism of carbohydrates (sugars), lipids (fat) and proteins. It is caused by inappropriate Insulin and Glucagon hormone production by the pancreas and/or resistance to the action of insulin in various organs. Insulin lowers blood glucose by promoting storage in the form of glycogen in the liver and its utilization by muscles. Glucagon increases blood glucose by converting glycogen and protein to glucose and promoting release of fatty acids.

In type 2 diabetes there is insulin resistance (reduced action) and/or abnormal production. While in type 1 there is no production of insulin because of destruction of cells in the pancreas.

Diabetes causes chronic high blood glucose (hyperglycaemia)

Diabetes can lead to illness (including complications) and early death. It is costly to the individual, family and the community. The prevalence is increasing, particularly in urban areas in developing countries - adding to the burden of ill health which already exists from communicable diseases. It is not infectious. In a number of patients there is a family history suggesting some inheritance.

Diabetes does not always present with characteristic symptoms and signs. It commonly has no symptoms of raised blood glucose, and so presents later with symptoms of the complications. Moreover diabetes is associated with other risk factors for heart disease like obesity, hypertension and raised blood lipids (fats). The main challenge is to detect diabetes early to prevent complications.

Deaths from heart disease are double that of people without diabetes.

In Africa there are estimated to be 2 or 3 undiagnosed cases for every case detected. It is essential that health workers are alert to the different presentations and diagnose it early. The patient suffering from diabetes needs long term and systematic care - with follow-up to ensure a healthy life-style and adherence to diabetes medication.

The increased blood glucose in diabetes results in glucose in the urine. Increased blood glucose and glucose in urine can cause increased thirst (polydipsia), increased frequency of passing large amounts of urine (polyuria), increased hunger (polyphagia), tiredness, loss of weight (without trying) and infection in urine (burning and pain on passing urine). Patients may present with these symptoms.

Complications

The complications of diabetes are explained to the patient over a number of consultations (is too much to take in the initial visits).

Prolonged high blood glucose (chronic hyperglycaemia) leads to a weakening of immune system. As a result, patients get recurrent bacterial and fungal infections of penis, vagina, skin, eye, urinary tract, respiratory tract (coughs, colds) and they are also more prone to getting tuberculosis (TB).

Left untreated, chronic hyperglycaemia damages the small and large blood vessels, leading to complications - such as vision defects, kidney failure, numb feet, heart attack, stroke, peripheral vascular disease, pain in the back of the legs and feet problems.

Increased blood glucose affects the blood vessels resulting in small and large blood vessel (vascular) complications:.

Small vessels (Micro-vascular)

There are three micro vascular complications:

- Diabetic retinopathy (diabetes eye disease) may present with deterioration in vision (severe or blindness in 12% after 15years).
- Nephropathy (kidney complications) may present with cloudy urine, weakness, lethargy or blood in urine.
- Neuropathy (nerve complications) may present as tingling, numbness or loss of sensation in the feet – if severe requiring amputation.

Microvascular complications set in early and are more common in people of African origin because of delay in the diagnosis. They are a major cause of illness (morbidity).

Large vessels (Macro-vascular)

- Heart attack, angina, is the most common complication of diabetes and can present as chest pains, shortness of breath and sweating.
- Stroke presents as weakness or paralysis of limbs, face,
- Peripheral vascular disease, presenting as pain in the back of the leg on walking; poor blood flow in the feet, leading to infections and ulcers; poor blood flow in the penis may lead to impotence.

Diabetes can be controlled if the patient takes lifestyle (diet and activity) advice and all of the recommended drugs life-long to prevent complications. Diabetes medications can be taken without interruption to normal life and work.

Diabetes neuropathy is damage to the nerves as a result of diabetes, and affects up to 50% of people with diabetes. Although many different problems can occur as a result, common symptoms are tingling, pain, numbness, or weakness in the feet and hands.

Chronic Obstructive Pulmonary Disease (COPD) and Asthma

Chronic Obstructive Pulmonary Disease

COPD is disease of the airways whereby there is inflammation, hypertrophy and increase in number of mucus secreting glands of bronchial tree and narrowing of breathing passages. This leads to increased mucus production and regular expectoration of sputum. It is irreversible because inflammation is persistent and there is loss of elastic recoil, destruction of lung tissue leading to fibrosis.

There are two main forms of COPD:

- Chronic bronchitis, defined by a long-term cough with mucus
- Emphysema, defined by destruction of the lungs over time

Most people with COPD have a combination of both conditions.

Bronchitis is lung damage and inflammation in the large airways and is characterised by reduced maximal expiratory flow and slow forced emptying of the lungs; features that do not change markedly over several months. This limitation in airflow is only minimally reversible with bronchodilators. It leads to cough productive of sputum on most days for at least three months of the year for more than 1 year.

Emphysema is lung damage and inflammation of the air sacs. It is defined as enlargement of the air spaces distal to the terminal bronchioles, with destruction of their walls. The destruction of air space walls reduces the surface area available for the exchange of oxygen and carbon dioxide during breathing. It also reduces the elasticity of the lung itself, which results in a loss of support for the airways that are embedded in the lung. These airways are more likely to collapse causing further limitation to airflow.

COPD is a condition which affects people over the age of 40. The symptoms develop slowly and some people may be unaware that they are sick. They present with chronic cough with mucus, regular sputum production or persistent and progressive breathlessness worse on exercise, with no variability, fatigue. They have at least 2 chest infections or bronchitis in previous two years. They present

with a history of smoking for over 20 years, working in a coal mine or in an environment of asbestosis. If these patients present with weight loss or haemoptysis you need to think about cancer.

COPD can lead to pulmonary hypertension, right ventricular hypertrophy and eventually right heart failure. Patients then can present with chest pain, effort intolerance and ankle swelling in heart failure.

Passive smoking may also lead to COPD. Most of the tobacco smoke in a room is that which is coming from the burning end of the cigarette rather than the smoke exhaled from the smoker's lungs. This smoke (called *side stream smoke*) is actually higher in concentration of toxic substances than exhaled smoke (*mainstream smoke*).

Some occupations are associated with increased exposure to dust that may cause COPD. These include coal miners, construction workers who handle cement, metal workers, grain handlers, cotton workers and workers in paper mills. However, the effect of smoking far outweighs any influences from the work environment.

There is no cure for COPD. However, there are many things you can do to relieve symptoms and keep the disease from getting worse.

Persons with COPD must stop smoking. This is the best way to slow down the lung damage.

Medications may be used to open the airways (bronchodilators), to reduce lung inflammation (steroids) or to treat infections (antibiotics) that may cause symptom flare-ups. Oxygen therapy at home may be needed if a person has a low level of oxygen in their blood.

Pulmonary rehabilitation includes teaching people how to breathe in a different way so they can stay active, how to maintain muscle strength in the legs so less demand is placed on the lungs when walking and how to use their medicines most effectively.

People who are affected may be helped through avoiding very cold air, making sure no one smokes in their home and reducing air pollution by eliminating fireplace smoke and other irritants.

Asthma

Asthma on the other hand is a chronic inflammation of the bronchial tubes (airways) that causes swelling and narrowing (constriction) of the airways. The result is

difficulty breathing. The bronchial narrowing is usually either totally or at least partially reversible with treatments.

Asthma presents with cough and breathlessness in young people. The symptoms are intermittent and vary from day to night and winter to summer. They may have a history of childhood asthma, eczema or hay fever or a family history of asthma or atopy. They are awake at night sometimes.

Prevalence of asthma is increasing, following rising standards of living and influence of urbanization (including environmental pollution).

The symptoms of asthma are triggered by:

- pollutants (e.g. smoke especially cigarettes, smog, diesel fumes, house dusts, dust mites)
- perfumes, deodorants, detergents, paints, certain smell
- certain food (fish, egg, peanuts, nuts, cow's milk, and soy)
- weather change, viral respiratory infections, psychological stress
- certain medications (e.g. beta-blockers and non-steroidal anti-inflammatory drugs like aspirin)
- pollens, animal hairs, cat and dog dander
- exercise - under extreme conditions of cold and in dry seasons, swimming in extreme cold or dry seasons
- maternal tobacco smoking during pregnancy and after delivery
- antibiotic usage in early life - they alter the gut flora and thus the immune system. (However, early life exposure to endotoxins may switch off the allergic response leading to reduced incidence of allergen driven diseases such as asthma).

Some facts about asthma

- Infants with asthma may experience lesser or no symptoms during their teenage but it comes back in adulthood. However, with regular treatment and proper preventive measures, children can have a near-normal life.
- Asthma is not contagious.
- Asthma can be hereditary. If one of the parents has asthma, the child has a 30% chance of having it. If both have asthma, the chance is 70%.
- Changing into a new environment may control asthma but only temporarily. Once sensitized to the new environment, it comes back again.
- Exercise induced asthma does exist but the kind of environment where the exercise is performed is more important. Done within limits, exercise can help improve symptoms e.g. swimming.
- Asthma is not psychological. Emotional triggers can cause attacks. One cannot fake the signs associated with asthma.

- Asthma medications are not addictive. Inhaler is just a mode of delivery of the asthma medication just as a tablet or syrup or injection is. By giving inhalers, we use lesser amount of drugs, thus lesser side-effects and lesser cost than the other modes of administration of the medications.
- Asthma is not curable and so one cannot come out of it, whatever be the mode of delivery of the drug- inhalers, syrup, tablet or injection.

Note: The difference between asthma and COPD is that asthma is reversible when you use H₁ blocker while COPD is not reversible. You can distinguish between the two conditions by symptoms or carrying out spirometry or peak flow reversibility after salbutamol inhalation.

Chest X ray is required to rule out TB or HIV related chest infection or bronchiectasis especially if no improvement after treatment of asthma or COPD.

Patients might present with polycythaemia secondary to hypoxia in COPD. They can also present with anaemia if TB or HIV or cancer is suspected.

Always Refer

- No response on starting treatment or
- if decline in FEV1
- suspect HIV
- suspect TB
- suspect cancer
- complications present, e.g. heart failure.

Cancers

Cancer is widely prevalent disease and is second only to cardiovascular disease as a cause of death. It is abnormal growth of abnormal cells in the body and it can invade local surroundings and spread to remote organs via blood stream or lymphatics and implant

There are many types of cancers. Some present early and some go undetected for long periods of time. A person who is elderly, > 50 years of age with a familial history and has been exposed to carcinogenic environment is more likely to get cancer but there is no age or sex restriction for cancer.

Some of the known risk factors

- Life style
 - Smoking: lung cancers (smoking)
 - Excess alcohol (liver cancer)

- Overweight
- Low fibre diet (colon cancer)
- Viral and Bacterial infections
 - Hepatitis infections (liver cancer)
 - Human papilloma viruses (cancer of the cervix and oral cavity)
 - HIV Infection (Kaposi sarcoma, ect)
 - Helicobacter pylori (stomach cancer)
 - Schistosomiasis (bladder cancer)
- Toxins: aflatoxins for liver cancer
- Ionizing radiation
- Heavy metals: exposure to asbestos, arsenic and heavy metal in lung cancer.

Clinical Presentation

Presentations can be varied depending on the system involved. They can be non-specific symptoms like loss of appetite, weight loss or lethargy or tiredness or generalised pains or abdominal pain. Any abnormal lumps (skin, breast), recurrent or abnormal bleeding (vagina, urine, rectal, sputum, vomitus) or skin changes (kaposi sarcoma, breast) should be a suspect. If there is a change in the usual, like bowel habit, endoscopy and biopsy is needed to rule out cancer.

National NCD programmes

WHO's global strategy for NCD focuses on population-wide promotion of a healthy diet and regular physical activity, therefore reducing obesity and hence diabetes and associated conditions such as hypertension.

Obesity, diabetes, hypertension and raised lipids often co-exist due to the same metabolic problem - known as the "metabolic syndrome".

Healthy diet, regular physical activity, maintaining a normal body weight and avoiding tobacco use and excess alcohol consumption can prevent or delay the onset of NCD and associated conditions such as raised BP, and their complications.

There should be national non communicable (chronic) diseases programme, including diabetes. This should incorporate health promotion for healthy life-styles, and organisation of care through the regular health services.

Implementation of quality services should be expanded in a phased manner. The implementation will include training and supervision of the relevant health workers. It is preferable to also orientate traditional healers.

It is important to use patient record cards, and regularly report data from the register. Health workers need to aim to achieve the targets of blood glucose, blood pressure and weight.

All service providers should be involved including governmental, non governmental organisations/ mission facilities and private practitioners.

Appropriate and effective education for patients and their family members/ treatment supporters is vital.

- ❖ DISCUSS WITH THE FACILITATOR TO CLARIFY ANY POINTS
 - ❖ THEN CONTINUE READING

It is important to screen the right people for NCD in the primary care centre (health centre, clinic or hospital OPD), and diagnose NCD. Patients with NCD need treatment and follow-up care for life which can be initiated at primary care centre in order to increase accessibility for patient. Those with complications or poor control need to be referred to the hospital for assessment and treatment. They should be referred back for follow-up at the primary care centre, with a clear documented care plan.

For effective care the health professional needs good communication skills with the patient and with other health workers.

Primary care centre is usually the nearest and most convenient health facility. However, for some patients the hospital is nearest site for their follow-up care. The health workers at the health unit screen for NCD, continue follow-up care for uncomplicated cases, supply the drugs, review adherence to treatment and appointments.

Hospital health workers main role is to assess complicated and severely ill patients referred from the primary care centre. In some settings they may also initiate uncomplicated patients. They should then refer down uncomplicated patients for follow-up care in the primary care centres. (Uncomplicated patients who live closer to the hospital than another facility may continue to be seen at the hospital).

Care activities at primary care centres

The health worker (nurse, AMO's, clinical officer or doctor) at the health centre will:

- Identify patients with risk factors for cardio vascular disease (CVD) and other NCD conditions e.g. the overweight and screen them - with BP check, weight, waist measurement, blood glucose and lipid tests.*
- Diagnose and prescribe drugs to patients with CVD, diabetes, hypertension, etc.*
- Education/ counselling on NCD, treatment and follow-up to the patient and family member. In addition, if there are trained nurse educators, they can spend more time on education/ counselling.*
- Send patients to the hospital for the annual check up, if not possible to do these checks at the primary care centre.*
- Refer people with suspected complications to the hospital*

- Do follow up care for life*
- Check adherence, symptoms and re-supply NCD drugs*
- Maintain patient records*
- Refer people with drug reactions to district level hospital*
- Trace patients who have not attended*
- Maintain the stock books for the drugs and materials.*

Care activities at the hospital

Screen and diagnose patients who present to the outpatients. Also provide follow-up care to patients, only if they live nearby and choose the hospital as their primary care centre (as for primary care centre above).

Also:

- Provide treatment for complex or severely ill patients*
- Register Patients with NCD and, when clinically stable, identify the nearest health unit (with trained staff) and discharge them back for follow-up care.*
- Maintain patient records and stock books for drugs and materials*
- Exceptionally, refer to a higher level hospital for treatment of complications, where not available at the district hospital.*

The hospital/ district health officer responsible will:

- Supervise care in the hospital, health centres and community (including health promotion/ prevention activities).*
- Prepare quarterly reports on case finding and case management*

- ❖ **DISCUSS WITH THE FACILITATOR TO CLARIFY ANY POINTS**
- ❖ **WAIT FOR THE FACILLITATOR TO PROCEED**

Who to screen for diabetes

SESSION OBJECTIVES

By the end of this session you will:

- Know which symptoms suggest diabetes or its complications
- Know the risk factors associated with diabetes
- Which patients with risk factors to check (screen) for diabetes with blood glucose test - even if no symptoms

Screen for diabetes

When you are seeing a patient certain symptoms or history should alert you to the possibility of diabetes, and so screen with a blood glucose test. Some symptoms clearly make you think of diabetes, but also be aware of the risk factors, other symptoms relating to diabetes, and symptoms of its complications.

Read “Screen for diabetes” page 22 of the desk guide. Then continue reading.

The typical symptoms of increased blood glucose are thirst (polydipsia) and frequency and greater amount and frequency of urine (polyuria):

The patient may volunteer these symptoms, or you may ask them:

- Do you have a frequency of passing urine? or excessive thirst ?
- For how long have you had the frequency? or thirst ?

Actually only around half of patients with diabetes present with a persistent frequency and thirst starting after the onset of disease. This is due to the high glucose in blood and in the urine. However, these symptoms are not only seen in diabetes. Polyuria can also happen due to excess alcohol, coffee, tea, or urinary infection (or some rarer medical conditions). But urinary tract infection causes frequent passage of small volumes of urine rather than a large volume as in diabetes.

- ❖ DISCUSS WITH THE FACILITATOR TO CLARIFY POINTS NOT UNDERSTOOD
- ❖ THEN CONTINUE

If polyuria and polydipsia are present, suspect diabetes and screen by taking blood glucose sample. You may also take a urine sample for infection if symptoms suggest this is a possibility (e.g. burning on passing urine).

The other half of patients with diabetes have other symptoms, symptoms of complications or risk factors but no classical symptoms of diabetes.

The other symptoms may be those due to infections (more likely in diabetes). Ask and look for infections e.g. of the skin, urinary tract, chest, which are more common in diabetes – as are HIV or TB.

People with complications of diabetes may present with chest pains, weakness, pain in calf on walking, foot problems or poor vision and other eye problems.

Patients with risk factors such as obesity or high BP or high lipids (may have a fatty deposit on the upper eye lid) or found during blood tests.

Screen with a fasting blood glucose test people who say they have been previously diagnosed with diabetes or have had a big baby or diabetes during pregnancy. The people with symptoms and signs requiring you to screen for diabetes were those you have just read on page 22 of the desk guide. Other occasional causes are the side effects of treatment with steroids, some schizophrenia drugs, and a type of anti-retroviral drug “protease inhibitor”, included e.g. in Kaletra.

Rationale for screening patients with following risk factors

- Family history of diabetes: Persons with family history of diabetes are more prone to having it themselves.
- Overweight and Obesity: Overweight and obese people are more likely to get diabetes. If overweight people present with recurrent infections or high blood pressure their urine and blood should be tested for glucose.
- High blood pressure: People with high blood pressure are more prone to develop diabetes. Conversely, people with diabetes are more likely to develop high blood pressure. There are very few symptoms of high blood pressure like headaches, blurred vision and feeling dizzy. Most people with high blood pressure do not know they are suffering from it.
- Urinary protein: People with protein in the urine during routine screening should be investigated for infection, but also screened for diabetes.

Anyone with the above should be screened with a blood glucose test (unless previously screened in the last year). If glucose meter is available do the blood test straight away. If not, send sample to the laboratory and record that a blood glucose test has been requested in the notes and in the outpatient register e.g. in the

“remarks” column. But if blood glucose is normal don't ignore - diagnose and treat other conditions. If you are not sure, refer.

Remember; also screen all patients with a previous diagnosis of diabetes (who are not currently receiving treatment) or gestational diabetes in women.

Check the BP. It is best to also screen for other conditions, such as raised BP as well. In particular in patients who are overweight, Check the BP if dizzy spells, headaches, vision changes, heart disease, strokes or kidney disease. If high treat this (BP is covered on *pages 17-19* of the desk guide, and below). It is especially important to treat raised BP in diabetes. Also check blood lipids in these patients, if available.

People with a fatty deposit on their upper eyelid (xanthelasma) should have their lipids checked if available as well as in people with chest pains / heart disease.

KEY POINTS

- Screen patients for diabetes if they have the typical symptoms of polydipsia and polyuria (together with weight loss and tiredness), as well as those with symptoms which may be due to recurrent infections e.g. skin, or complications of diabetes e.g. chest pains, foot problems, eye problems, or if risk factors e.g. overweight or high BP
- Take a blood glucose test, or if not available then a urine glucose test.
- A person with diabetes can be asymptomatic or present with symptoms of increased blood glucose i.e. thirst, increased hunger, increased frequency of passing large amounts of urine or symptoms of complications i.e. chest pains, tingling of hands and feet, deterioration of vision.
- The detection and treatment of diabetes are a high public health priority to reduce morbidity and mortality in the population.
- Patient who are obese, have hypertension or high blood triglycerides are more likely to have diabetes and management of all these conditions is required in these patients.

❖ DISCUSS WITH THE FACILITATOR TO CLARIFY ANY POINTS
❖ THEN CONTINUE READING

Examine the patient

Learning objective

- To know what to examine for in NCD and associated conditions.

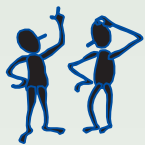
To support your history, and to spot any other problems, you should perform a physical examination. Also, for well patients in whom you have identified risk factors (for NCD) you should gain extra information including a blood pressure and waist measurement and weight

The examination will also tell you if the patient is severely ill, and needs immediate transfer to hospital. Read “Screen for diabetes” on page 22 of the desk guide, and the signs of “Severe illness” in the appendix of the desk guide, pages 29-30.

If any of these signs are present they indicate a seriously ill patient needing emergency treatment and referral to a hospital doctor:

In diabetic ketoacidosis and coma, refer to the IDF Type 2 Diabetes clinical practice guidelines for SSA, page 44. For other severe illness see the acute care booklet of the “Integrated Management of Adolescent/ Adult Illness” or other clinical reference.

Role Play Exercise



Case 1: Communication and NCD Knowledge

Instructions: Split into groups of 3 and decide who will play each role; health worker, patient and observer. Read the information below. You have 15 minutes to complete this exercise. You should spend no more than 10 minutes on the role play and leave 5 minutes at the end for the observer to give feedback.

Information for the health worker

In this role play you will act the part of the health worker. This is your chance to practise using the communication skills we discussed in the last session. Use page 22 of the desk guide to remind you what symptoms and risk factors to look for. Try to get as much information from the patient as you can. Start with open questions and try to make the patient feel at ease. If you want more specific information, try asking closed questions.

Information for the observer

In this role play you will observe the consultation. Refer to page 22 of the desk guide to remind you what symptoms and risk factors that the health worker should check for. You may also read the information given to the patient beforehand. Do make notes whilst you are observing. Did they use open questions? Did they make the patient feel at ease? Did they miss any important information? Did they remember to check for cardiovascular risk factors? After the role play comment on something that was good first, and then suggest what could have been done better, i.e. be positive and constructive in your feedback.

Information for the patient (Hadija Mohamed)

In this role play you will act the part of the patient using the information given below. Try to make it as realistic as possible and answer only the questions you are asked by the health worker. If they ask open questions you may give the information you think is appropriate. Do not make up additional symptoms. However, you may add non clinical detail to the character and situation of Fatima if it helps the role play.

Information for the patient (continued)

You are Hadija, a 45 year old married housewife. You have come to the health centre because of itching and discharge from the vagina for 4 days. You want some cream for this which you were given for the same problem a few weeks ago. It went away after the treatment but now has come back again. If the health worker asks, tell them that you have been passing large amount of urine frequently recently, including at night, for the last few weeks. You have also been getting out of bed at night to drink water because you are feeling thirsty. You aren't sure whether you have lost weight. You do not smoke or drink alcohol. You are on no medications at present. You have 3 children who are now grown up but there were no pregnancy or birth problems. Your father had a stroke when he was about 60. Your mother is comfortably large, diagnosed with "sugar" and takes tablets "when she needs to"; but recently the back of her legs hurt when she walks.

After the role play and feedback by the observer, continue and do the following written exercise.

Written Exercises 2



Following on from the role-play exercise, here is some additional information obtained during the consultation:

- Waist measurement 36" (91.4cm)
- Pulse 88 beats per minute (bpm)
- Respiratory Rate 14 per minute
- Blood pressure 162/98 mmHg
- Temperature 36.5°C
- Examination; chest is clear, abdomen is soft and non-tender
- Urine – no urine testing available

Now answer the following questions about Hadija.

1. Is Hadija severely ill? (Does she require immediate transfer to hospital?)
2. Which symptoms identified in the history suggest diabetes?
3. How can you confirm the diagnosis of diabetes?
4. Think about her cardiovascular risk factors. Assuming she is confirmed to have diabetes, what other associated conditions do you think she might have?

Role Play Exercise



Case 2: Knowledge Assessment

Instructions: Split into your groups of 3 as before. This time each participant should play a different role. The health worker and observer should refer to the role-play instructions as for Case 1. Information for the patient only is on the next page. Refer to the desk guide pages 22 to help you.

Information for the patient (Peter Mbaruku)

You are Peter Mbaruku, aged 42 years, previously a soldier, now living in the city and working as a security guard. You have come to the health centre today because you have not been feeling well for a few months. You aren't sure what is wrong, but you feel tired all the time. You have put on a lot of weight since leaving the army because you do less exercise and eat fried food from the street-vendors. If the health worker asks, mention that you have been urinating more often in the last few weeks. You haven't had any recent skin or urine infections. You have never had problems with your vision or pins and needles in your feet. Neither have you had any chest pains. However, you think your uncle might have diabetes. He is very overweight.

You smoke 20/day but do not drink any alcohol.

After the role play and feedback by the observer, continue and do the following written exercise.

Written Exercises 3



Now answer the following questions about Peter Mbaruku:

1. Does Peter have any risk factors for diabetes?
2. Does the history suggest any diabetes symptoms?
3. How can you confirm the diagnosis of diabetes?
4. What other associated risk factors should you consider in this patient?
5. What further information do you need to obtain? (e.g. from examination).

Diagnosing Non Communicable Diseases

Health workers need to be alert for symptoms/signs of NCD especially in adults over 30 years. If the patient mentions relevant symptom or is found to have any of the following – ask for the related symptoms (e.g. as in brackets) and examine:

Current symptoms:

- Unexplained loss of weight (involuntary) (Diabetes, cancer, TB)
- Chest pain on exertion (angina, MI, heart failure)
- Breathlessness on exertion (heart failure, if chronic rule out TB, COPD)
- Frequency of urination (urine infection, diabetes)
- Passing blood in urine (Kidney, urinary bladder cancer)
- Post-coital bleeding, unexplained vaginal bleeding, excessive vaginal discharge (cancer of the cervix)
- Change in bowel habits, blood in stools or vomitus (bowel or stomach cancer)
- Difficulty in urination, irregular urine flow, hesitancy (prostate cancer)
- Calf pain on exertion (peripheral vascular disease)
- Breast tenderness, nipple discharge, lumps.

History of:

- Physical activity level
- Excessive use of salt, animal fats, refined foods
- Tobacco use
- Alcohol use more than 2 drinks per day
- Raised Blood Pressure (BP)
- Diabetes mellitus/ COPD/ any cancers
- Heart disease/ Stroke/ peripheral vascular disease
- Current medication.

Family history of:

- Blood Pressure
- Diabetes mellitus
- Heart disease
- Stroke

Examine for:

- Breast lump, breast asymmetry, blood stained nipple discharge, skin retraction, and eczematous change
- Ankle/pedal oedema
- Full medical exam including chest auscultation.

Measure (in people with a risk factor or if look over weight):

- Weight
- Waist circumference
- Height
- Blood Pressure

Laboratory:

- Urinalysis – protein, blood, glucose
- Ketones on urine if signs of ketoacidosis are present
- Blood Glucose (fasting or random)

All patients with abnormal symptoms or signs should be further assessed, appropriately counselled and either treated or – if severe or complicated - referred to a higher level. This strategy uses an opportunity for **prevention and/or early diagnosis** of NCDs presented by patients attending our primary care centres and hospital outpatients.

Read pg 2–5 of desk guide and the diagnostic flow charts.

Case study questions and discussion

The following case studies are designed to help health workers to identify non-communicable disease in a real-life context, i.e. in patients presenting to the health centre with a variety of symptoms and signs. There may be diagnosis of common communicable and/or chronic disease in each case.

Instructions

For the following case examples, decide what the most likely diagnosis is. Keep pages 2-5 of the deskguide open to help you. Then make notes on the possible diagnoses and tests required. Finally, answer the following questions:

- a) What are the likely possible **diagnoses**?
- b) Could there be an underlying **chronic disease**?
- c) What tests could help you to **confirm or exclude diagnoses**?
- d) Is the patient **severely ill**? (based on the information available).

When you've completed making brief notes on the cases, you will be given the "answers" and your facilitator will discuss the cases. As you go through them, if you wish, ask your facilitator about the diagnoses, tests and, if severe, referral to the hospital doctor.

Cases

1. Mrs M is 35 years old and has never smoked. She complains of cough that keeps her awake at night. She has had the cough for 3 weeks now. There is no sputum. She tells you that she often has this cough in the winter months. (wet season?) She says her chest feels 'tight'.

What are the answers to the 4 questions (a-d above)?

- a) *Example. Mrs M: Likely is asthma, due to the past history of "tight" (wheezy) chest and cough at night.*
- b) *But could be TB as cough for 3 weeks;*
- c) *Do 3 sputum samples, and maybe, especially if the TB smears are negative, do a chest X-ray and seek medical opinion to exclude TB.*
- d) *No the patient is not severely ill and can be managed in the community*

2. Mr N is a 52 year old who has had a cough for one month. He has been feeling unwell and thinks he has lost one stone in weight. He has smoked 10 cigarettes per day for 30 years. He says he's had no sputum or blood. He has also had difficulty swallowing food because his mouth and throat feel sore. When you examine him you notice he is very thin. He has a fever and there are white patches on his tongue.

What are the answers to the 4 questions (a-d above)?

3. Mr O is a 67 year old mechanic who comes with one week history of cough with green sputum. You see that he was breathless on walking from the waiting room. He smoked until 2 years ago. On examination he has a temperature of 38.5 degrees C and you hear crackles (crepitations) in the left lung. His pulse is 108 and breathing (respiratory) rate is 30.

What are the answers to the 4 questions (a-d above)?

4. Mr P is a 68 year old street vendor who has had a cough with green sputum for 10 days. He has smoked 20 cigarettes per day for the last 50 years. He feels 'hot and cold' and shivery. He is more breathless than usual. You see from his clinic notes that he needed antibiotic treatment for a chest infection 2 months ago, and he says he had the same illness 4 times last year. On examination his temperature is 37.5 C, pulse 80, BP 150/92mmHg, average

height but over weight (85kg). His chest sounds quiet. You notice he also has swollen ankles. He says they have been swollen on and off for 6 months.

What are the answers to the 4 questions (a-d above)?

5. Mr R is a 58 year old smoker who complains of chest pain. He says it comes on when he walks uphill and lasts 10 minutes. He also feels breathless sometimes. If he rests it goes away. His blood pressure is 156/98 mmHg, pulse 80, respiratory rate 14.

What are the answers to the 4 questions (a-d above)?

6. Mrs Q is a 50 year old grandmother who comes complaining she feels tired and weak all the time. She gave up smoking 10 years ago. She has had a cough for the last 3 weeks. She has not had fever but finds it difficult to sleep because she feels sweaty at night. She has noticed that her clothes have become loose. Her sister who lives in the same house has also had a cough with sputum for 3 months.

What are the answers to the 4 questions (a-d above)?

7. Mrs S is a 47 year old school teacher. She complains of frequency and a burning sensation on passing urine. She has often been feeling tired recently. You notice that she is overweight.

What are the answers to the 4 questions (a-d above)?

Reading pages 8-10 of the Desk Guide.

Diagnosis of Diabetes

One of the important chronic illnesses, which is commonly missed because it is asymptomatic, is diabetes. Diabetes, especially if diagnosed late or poorly treated, leads to complications of visual loss, heart, blood vessel, kidney and nerve damage. Yet, most (type 2) can be effectively managed in primary care centres.

By the end of this session, you will be able to:

1. Know the symptoms and signs that make you suspect diabetes
2. Decide which blood glucose tests to do
3. Interpret blood glucose results
4. Use the results to make a diagnosis
5. Record new patients with diabetes in a diabetes register
6. Know which patients can be managed in the local health unit, and which patients need to be referred to a hospital doctor

Definitions

There are 3 types of blood glucose test available. When interpreting the results you must know which type was done in order to interpret the result correctly.

Random Blood Glucose (RBG)

This can be taken at any time. It does not take into account what the patient has been eating or drinking. It is therefore less sensitive than the other tests. However, it is the most convenient to perform. Diabetes can be diagnosed on the basis of two RBG results if necessary.

Fasting Blood Glucose (FBG)

Before taking the blood test, the patient must be fasted for at least 8 hours. The easiest way to do this is to arrange an appointment for the patient to have the blood test first thing in the morning. They should fast overnight and must not have anything to eat until after the test.

Oral Glucose Tolerance Test (OGTT)

This is the most accurate way of assessing how a patient metabolises glucose:

Take fasting blood glucose (FBG) in the morning. Give a glucose drink (75g of glucose). Take blood glucose 2 hours later. It is difficult to do because it requires 2 tests in the same day and the patient has to wait at the clinic for 2 hours.

Read page 13 of the desk guide, then continue reading below.

Deciding which blood glucose tests to do and interpreting the results

You have already learnt how to identify patients for screening. The first stage is to check random blood glucose on all patients. Refer to the desk guide page 22. After this there are several options;

1. If the result is normal ($<6.1\text{mmol/L}$) then this excludes diabetes and no further action is required.
2. If the result is high ($>11.1\text{mmol/L}$) then another glucose test must be done to confirm the diagnosis. This can be either an RBG or a FBG (if the patient can return after overnight fast). OGTT can also be used to confirm the diagnosis.
3. If the result is in between the normal and high values ($6.1 - 11.1\text{ mmol/l}$) this **suggests** 'pre-diabetes'. *In this situation it is best to do a glucose tolerance test because it is more sensitive in identifying pre-diabetes and new diabetes.*

Always clearly explain why tests are being done and give appointments for review. This will avoid losing the patient before a diagnosis is made and will help to build trust with the patient.

Making a diagnosis

Diabetes is confirmed if a patient has **two** high random blood glucose results (RBG)

Or

One high fasting and **one** high blood glucose 2 hours after glucose drink (75g glucose)

Or

Two high fasting blood glucose (FBG) results

Pre-diabetes is confirmed if the result is in between the normal and high values (RBG: $7.8 - 11.1\text{mmol/l}$ or FBG $6.1 - 6.9\text{mmol/l}$). Pre-diabetes will go on to develop diabetes in the future. They do not need drug treatment at this stage, but should be given healthy lifestyle advice. They should have their blood glucose rechecked every year.

The diagnosis of diabetes may be made in a person with symptoms of diabetes if a urine test is positive for glucose and a test for blood glucose is not available.

Recording patients with new diabetes in the register

When the laboratory report of results is received, you should record these results in *Register of Diabetes Suspects* and decide upon appropriate action. This enables better monitoring and evaluation of Diabetes services.

KEY POINT

Two high blood glucose results taken in two different days are required to make a diagnosis of diabetes

Deciding which patients have complicated diabetes

Depending on the level of your health facility, you may only select treatment for uncomplicated diabetes. A hospital Doctor may diagnose and prescribe treatment for complicated diabetes. Patients with uncomplicated diabetes (see list below) can be managed at lower level facilities.

Uncomplicated diabetes:

- On diet and increased activity only
- On diet, activity and on oral drugs
- No peripheral vascular disease or heart disease or stroke
- No kidney problems or protein in the urine or visual problems or abnormal sensations or weakness of any part of the body
- On treatment for Hypertension
- On treatment for high cholesterol /triglycerides
- On treatment for obesity

The following problems indicate that a patient has complications or has special circumstances which require management by a hospital doctor:

- Type 1 Diabetes
- Need insulin
- Patient not responding to available treatment diabetes
 - Very variable blood glucose levels
 - Having hypoglycaemia without knowing it.
 - Abnormal sensations of any part of the body
 - Features of angina (vascular or heart disease)
- Renal involvement (high creatinine and or protein in the urine)
- Retinal damage
- Pregnant
- Child under 20 yrs of age
- Other associated NCD conditions i.e. cancers, COPD, TB or HIV

Written Exercises 4



Case 1: Hadija (continued from previous section).

Hadija presented with frequency passing urine and vaginal discharge, and "hot body". You asked about previous illnesses and she mentioned a similar previous episode. You treated her for vaginal discharge, but also, because of recurrent infections, polyuria and polydipsia; you suspected diabetes and sent her for a random blood glucose test immediately after the consultation.

You have now received the blood result from the laboratory:

Patient ID: Hadija Akubari DOB: 12/04/1956
Date of sample: 05/08/2010
Random Blood Glucose: 11.4mmol/l

Questions:

1. Can the patient be diagnosed with diabetes based on this blood result?
2. What further action is required to make a diagnosis?

You decide to arrange another blood test for Hadija to confirm the diagnosis. She has little money and has to travel a long way to the clinic. She is unable to come first thing in the morning and wait for two hours because she needs to attend to her family.

Questions:

3. Which second blood glucose test would best suit Hadija?

You now have two blood glucose results for Hadija:

05/08/10	RBG: 11.4mmol/l
11/08/10	RBG: 11.8mmol/l

Questions

Refer to page 22 of the Desk Guide.

4. Can you confirm the diagnosis of diabetes in Hadija?
5. At this stage, can Hadija's case be managed in the local health unit?

Written Exercises 5

Case 2: Peter Mbaruku (continued from the last session)

Peter came to the clinic saying he was “fed up” as he was tired all the time. You asked if he had low mood and loss of interest in things – he hadn’t symptoms of depression. You also asked about other symptoms and he said he was going often to pass urine. He was overweight and has a family history of diabetes. You suspected diabetes and sent him for an RBG. The result is as below. After discussion with him you arranged for him to return to the clinic the next morning for a fasting blood glucose test. Both results are now available:

Patient ID: Peter Mbaruku	DOB: 01/09/1958
Date of 1st sample: 13/01/2011	Date of 2nd sample: 14/01/11
RBG: 9.6mmol/l	FBG: 6.4mmol/L

Questions

1. What diagnosis can you make based on these results?
2. How would you explain to Peter what this means?
3. What advice should you give him?
4. Can his case be managed at the local health unit?
5. What follow-up should you arrange for Peter?

KEY POINTS

- Every suspect diabetes patient must have 2 blood samples examined for glucose before classification
- If a patient has both high fasting and 2 hours after glucose drink (75g or 400ml of lucozade) blood glucose they must be classified as diabetes.
- Suspects who are found to have prediabetes (impaired glucose tolerance or impaired fasting glucose) should be given advice to eat a healthy sensible diet and increase their activity. If there is little improvement following the lifestyle advise, take another set of two blood glucose samples for examination. If the blood glucose are high *FBG > 7.0mmol/l or RBG >11.1mmol/l they have diabetes.
- Explain why tests are being done and give an appointment to review the results with the patient to avoid losing contact.
- There are two treatment categories:

Prediabetes and Uncomplicated Diabetes	Needing diet, increased activity, with or without oral drugs without complications
Complicated diabetes	Needing insulin, hypoglycaemic episodes Have small vessel or big vessels disease

Prescribe diabetes treatment

Learning objectives

By the end of this section you should be able to:

- Decide upon the treatment regimen;
- Find the drug dose based on the patient's blood glucose;
- Check for contraindications and follow the correct course of action;
- Mark the drug on the treatment card.

Introduction

In the last session we went through the diagnosis of diabetes in a subject based on random and fasting blood glucose tests along with the symptoms and the risk factors.

The Treatment Strategies should always include Lifestyle care (diet, increased activity, stopping smoking and disciplined alcohol intake) and Self care at each visit. Good control of blood glucose, BP, weight and lipids is important. Self monitoring improves therapy especially if one is on insulin injections. Record keeping is critical. Management should be tailored for each individual and aims are to reduce symptoms, improve quality of life by preventing complications and cardiovascular disease. Aim to:

- **Detect other risk factors early**
- **Control blood glucose, lipids, weight and blood pressure in majority of those detected.**
- **Prevent complications including cardiovascular disease**
- **Reduce mortality and morbidity due to diabetes**

Read about diabetes control on pages 22-28 of the desk guide.

Decide on the correct treatment

Cases of diabetes can be successfully controlled, if all of the correct doses are taken at the correct times along with diet and increased activity advice. If the patient does not follow the course of treatment, blood glucose will remain high and complications can ensue.

Healthy eating (diet) is discussed, starting with what they currently eat, and what is available. Also practical ways to increase activity are discussed and agreed. Together these should reduce weight and bring down the blood glucose, BP and lipids. This said, most patients will also need drugs, along with lifestyle changes, to lower the blood glucose. These are usually started after a trial of 3 months of lifestyle changes alone. Symptoms improve when blood glucose comes down.

The continuation phase of lifestyle is for life. For normal-over weight patients the first drug Metformin is commenced. If the blood glucose is still not optimum then a Sulphonylurea (2nd step) and then a Glitazone (3rd step) can be added. However, in low-normal weight patients' short acting sulphonylurea may be started as the first line.

Note though that hypoglycaemia as a cause of hospital admission is more frequently related to Sulphonylurea drugs (especially long acting) and may be severe, another reason to start with Metformin.

After stepping up the Metformin every one- two weeks to the maximum tolerated dose, thereafter a three months trial is given for each step before adding, increasing or changing the drug treatment. If a drug is not available alternative from same group is used. If not controlled on max dose, move to the next step, adding the next drug – up to three (even four) drugs. At each review do blood glucose (or if not available a urine glucose) and a urine test for glucose, blood and protein.

If after maximum tolerated doses of 3 oral agents for 6 months fail to bring the blood glucose down then refer to the hospital; where the patient may be educated and taught the technique of home blood glucose monitoring and then insulin initiated.

Drugs

When drugs are added on to therapy and if fixed dose drug combinations are available and cheap in the host country they should be recommended.

Metformin

Check for contraindications

Occasionally, contraindications mean that patients will not be able to take the usual: refer to the hospital doctor for advice and management. As usual with drugs you have to check especially breastfeeding and pregnant women, children and in people with kidney, liver or heart disease.

Read the desk guide page 34 “Contraindications”.

If there is poor compliance to the treatment schedule or another problem preventing the correct use of medication, this can lead to complications of diabetes. Complications are a problem particularly difficult in areas where there are no facilities for diagnosis of heart attacks or kidney disease. Complications can result from a health system being too weak to support quick diagnosis and successful treatment. Few countries have national policies for renal disease diagnosis and treatment. In those that do, treatment commonly fails to meet acceptable standards. It is important that the local policy is consistent with regional and national policy. If you suspect any complication of diabetes refer the patient to the hospital doctor for care.

Discuss with the facilitator the local arrangements for the management of complications of diabetes and make a note in your notebook.

Record the drug regimen on the diabetes treatment card.

Having used the recommended drug regimens:

1. Write the number of tablets for each drug in the correct boxes under patients' treatment category.
2. Write the number of tablets per dose in one of the boxes.
3. If an injection of insulin is required as part of the treatment regimen, record the dosage required in the relevant box.

KEY POINTS

The number of drugs prescribed is determined by the duration and severity of diabetes in a patient, other risk factors, and the phase of treatment (lifestyle or intensive drugs).

Always increase the dose of diabetes drugs step by step according to the age, condition, complications, renal and liver functions, weight, hypoglycaemic episodes and original blood glucose status of the patient.

Take care to identify and refer following patients to hospital doctor: breastfeeding, pregnant or planning pregnancy, patients less than 20 years of age (children), and people with renal disease, liver disease, neuropathy, retinopathy, nephropathy, HIV on anti-retroviral treatment or TB on chemotherapy.

If any of these complications develop during the diabetes treatment, remember to reconsider the treatment regimen and refer if necessary. Renal disease, heart problems and vision defects develop when patients do not take their tablets regularly, or stop taking their tablets. Refer any patient immediately who is not improving with diabetes drugs or insulin.

Written Exercises 6



Peter Mbaruku

Remember Peter who was diagnosed with pre-diabetes. A year later he attended for his annual follow-up appointment. (See page 25 of the desk guide for essential actions at each visit).

He felt much the same as he did last time you saw him. He managed to improve his diet and lose some weight but unfortunately he admitted that he still smokes. You examined him and he had no signs of severe illness or complications. You sent him for repeat blood glucose testing. He required tests on two separate occasions. Here are the results:

Patient ID: Peter Mbaruku	DOB: 01/09/1958
Date of 1st sample: 13/08/2011	Date of 2nd sample: 14/08/11
RBG: 11.8mmol/l	FBG: 7.8mmol/l

Questions

1. Chose the appropriate diagnosis from the following:
 - a. Peter still has pre-diabetes
 - b. Peter has developed diabetes.
2. What is the next stage in his treatment? (bear in mind he has already followed lifestyle advice for one year)
3. Which medication should you commence him on?
4. How will you advise him about dosing?
5. What side effects should you warn him about?
6. How soon should you arrange his next appointment?

FILL FORMS CARDS and REGISTER

INTRODUCTION

Recording the information is very important because the care of diabetes is long-term and dependant on previous information. You can compare the weight and blood test results etc. and response to treatment over time. This makes quality care possible, and enables detection of complications when they arise. The card and register help identify people missing (being late) for their appointment, and getting in touch with them.

SESSION OBJECTIVES

By the end of this chapter you will be able to:

- interpret, and transfer information onto the diabetes *Treatment card***
- interpret, and transfer information onto the diabetes *Patient card***
- interpret, and transfer information onto the diabetes *Institutional Register***

Fill out the diabetes treatment card

The diabetes treatment card records all patient information including personal details, information about the diagnosis, classification, and category of diabetes. Details of the treatment regimen and doses are recorded, and a record is made when doses are taken. Usually, the diabetes treatment cards are kept at the health facility, and the patient will have a briefer patient card. Information from the diabetes treatment card will be used to update the Institutional diabetes register whenever the patient is reviewed at the treatment centre.

Now turn to your national diabetes treatment card. Many of the sections are self-explanatory. We will highlight only those sections that are often filled in incorrectly.

The front of the diabetes treatment card

The front documents specific information about the patient and their illness, including the category of diabetes treatment and the exact doses of drugs that will be used. At the side of the card, there is a table to record the drugs taken. Important points to remember about completing the diabetes treatment card are:

- The full name of the patient and the treatment supporter are needed. Special care is needed where people may have similar names

- Note down full details of how to find the patient and treatment supporter's homes: not just the simple address and especially not just the postal address.
- The district diabetes number from the diabetes register. Add this number to the diabetes treatment card when the patient is registered.
- The health facility is where the patient is registered and receiving treatment
- Record details of whether the patients blood glucose results, new or re-treatment diabetes on the card.
- Blood glucose - the pre-treatment blood glucose is recorded at diagnosis. At review appointments, the blood glucose is recorded to monitor the patient's progress.
- Physical activity (diet)
- Activity
- Smoking
- Alcohol

The back of the diabetes treatment card

Continuation of lifestyle with Drugs treatment phase: This section will contain all the details of the patient's treatment during the continuation phase. It will be completed when the patient changes from intensive lifestyle phase to continuation drug treatment phase. The format has a section for each treatment category and for details of the chosen drugs.

Remarks: this space is available for any additional comments for which there is no other box. Examples include:

- Additional tests that played a part in the diagnosis (e.g. urine test or blood lipids);
- Contraindications or drug reactions and the action taken;
- Preventative targeting of household members if needed, for example the siblings and the children with lifestyle measures;x
- Active tracing of defaulter – details of attempts to contact a defaulting patient.

CVD/ Diabetes Co-ordinator

As well as the technical information, some sections need to be completed by the person co-ordinating the diabetes programme. The relevant person specifically needs to confirm that the full exact details of the patient's name, address and directions to their house are included correctly.

At the end of their interview with the patient, the diabetes co-ordinator must fill in all the details relating to the arrangements for community-based DM care. They will record the name and address of the contact person, the name of the health unit, treatment centre, and treatment supporter.



Registering

When registering, the diabetes patient card should be completed and given to the patient. The patient should keep the diabetes patient card and take it along to the health facility every time they attend. The diabetes patient card helps the care provider to trace the patient's diabetes treatment card during follow-up visits. The diabetes patient card serves as a reminder for the patient to visit the health facility on the correct date of appointment. It is also an important tool for recording information about prescriptions and for passing information between health centres. The diabetes co-ordinator will transfer information from the diabetes register to the diabetes patient card at the time of registering the diabetes patient.

Written Exercises 7



Peter Mbaruku should have been entered on the treatment card and treatment register on his first visit, when he was diagnosed with pre-diabetes and given lifestyle advice. The treatment card ensures that you keep all his clinic data in one place. The treatment register means that if he does not return in a year to have his blood glucose re-checked you can contact him and remind him to attend.

Now practise using the treatment card and register. Enter the details of Peter Mbaruku's first clinic visit. (See Written exercises 2.)

Answers – see separate documents;

Example Peter DIABETES_TREATMENT_CARD.doc

Example Peter DIABETES_TREATMENT_REGISTER.doc

DIABETES: INSTITUTIONAL CVD/DIABETES REGISTER.

Each district diabetes programme should maintain a diabetes register, in order to keep a record of all diabetes patients who have been diagnosed in the centre and for whom treatment has been prescribed. The information from the patient's treatment card is the main source of information. The health worker responsible for the diabetes programme will ensure that each patient is entered onto the register.

Please refer to a copy of your countries diabetes register.

A District diabetes register is based on the Institutional DM registers cross-checking with the treatment card. The Institutional and District diabetes Registers are used to provide Quarterly reports on case finding and treatment outcomes for the treatment centre and for the District. These registers ensure that your diabetes Programme can monitor and improve diabetes services in your country. Please refer to your copy of the District diabetes register.

Patients should be entered onto the diabetes register at the time of initial interview, preferably with the patient present to ensure the correct details are recorded for each patient. Your local context will determine who will conduct this initial interview. However, the exact way that the diabetes office is organised will vary from place to place. There are 2 different basic systems that can both help to ensure that the diabetes register is completed properly and in a timely manner.

- 1. The diabetes register is kept on the diabetes office desk where the diabetes Coordinator will see the diabetes patients. As the meeting proceeds, they will add the patient's details to the register. In this way, the diabetes register will have been completed for that particular patient by the time that patient leaves. Their diabetes treatment card can immediately be filed in the diabetes treatment card box, under the month when his next visit to the diagnostic centre is due.**
- 2. The diabetes register is kept in a separate office to the room where the diabetes co-ordinator sees the diabetes patients. The diabetes co-ordinator sees the diabetes patients and they use the diabetes treatment cards during the consultation. During the day, all the diabetes treatment cards are collected in a separate pile. At the end of the clinic, all of these diabetes treatment cards are taken to the diabetes register and the details for each patient are entered onto the relevant line on the register. The diabetes treatment cards should then be immediately taken and filed in the appropriate place in the diabetes treatment card box. This system is more prone to error, as the diabetes co-ordinator could forget to collect the diabetes treatment cards, or forget to re-file them properly.**

There are circumstances, however, where this system may be preferable. An example might be where more than one diabetes co-ordinator is working and they are unable to use the diabetes register at the same time, or if the diabetes register is kept in electronic form and the computer is not accessible during the clinic.

We will now look at some sections of the Institutional Register in turn:

Serial Number: For example, 01/04 - Complete the serial number, using the next number on from the previous patient in the register. It depicts the serial number and year of registration of the patient: A year starts with number 1.

District DM Number: This provides a record of the serial number and year of registration into the district diabetes register.

District: Record the district of the patient's usual residency.

Name in full and next of kin: Record the full name of patient in the first line and the full name of next of kin and their relationship to the patient on the second line.

Sex: This should be recorded as M for male and F for female.

Age: Age should be recorded in years (25 y).

Address: Record the usual residence of the patient with the district in the space marked (1), Sub- district in the space marked (2), village in the space marked (3) and section if applicable in the space marked (4).

Nearest Health Facility: This should be the nearest health facility to the patient's usual residence where they can obtain Anti-DM drugs.

Date treatment started and regimen: On the first line, record the date treatment was started by the health facility. e.g: 19/10/10,
On the second line, record the regimen e.g. diet/activity, metformin

Type of patient: The following types of patient should be recorded on the card:
N for a New case; **T** for a Transferred in; **D** for a Treatment after Default case; and **O** for Others. These codes are provided at the bottom of the Institutional DM Register.

Transfer in: Complete if a patient is transferred from one treatment centre to a treatment near his home to complete treatment.

Blood glucose results: *Record the date the glucose was examined in the first line. Example 10/10/10 and the result of the blood glucose examination in the second line.*

Date treatment stopped: Record the date on which the patient stopped taking medication if applicable.

Remarks: This is the last column in institutional diabetes Register. The comments to be recorded in this space may include mention of *treatment supporter* and additional information about patient e.g. drug reactions.

KEY POINTS

- All patients diagnosed as having diabetes must be registered with the diabetes/CVD programme.
- Part of the diabetes treatment Card is completed when registering the patient and the information recorded includes the patient's address, name and address of a contact person, the diagnostic centre and the CVD/District diabetes number.
- The diabetes Patient Card contains general information about the patient and medical information about the patient's diagnosis and treatment.
- The diabetes Register contains information on all patients diagnosed as having diabetes at the diagnostic centre, their treatment and the result of follow-up blood glucose examinations. It is used for monitoring the effectiveness of the programme, since quarterly reports on case finding and treatment outcomes are based on information from the diabetes register.

Diabetes mellitus and tuberculosis

Occurrence

- There are approximately 7 million new cases of diabetes added each year and about 3.5 million deaths because of diabetes.
- There are 9.2 million TB cases and about 1.7 million deaths due to TB are recorded annually.

Associations between Tuberculosis and Diabetes

- For people with TB infection and no risk factors, the risk for TB disease is about 5% in the first two years after infection and about 10% over a lifetime.
- For people with TB infection and diabetes, the risk for TB disease is 3 times as high, or about 30% over a lifetime.
- For people with TB infection and HIV infection, the risk for TB disease is about 7% to 10% per year, a very high risk over a lifetime. In an HIV-infected person, TB disease can develop in either of two ways. First, a person who has TB infection can become infected with HIV and then develop TB disease as the immune system is weakened. Second, a person with HIV infection can become infected with *M. tuberculosis* and then rapidly develop TB disease.
- Diabetic patients are 3 - 4 times more likely to have tuberculosis than people without diabetes.
- In developing countries where tuberculosis is common, the 10-year actual risk of acquiring tuberculosis may be as high as 25% for Type I diabetes mellitus. For type 2 Diabetes, 5-10% may have pulmonary tuberculosis
- TB infections in people with diabetes are more severe than in people without diabetes. They are more likely to cough up blood, have cavities in the lung tissue, poorer response to drug treatment and a higher rate of the illness compared to those without diabetes.
- Tuberculosis infection in diabetes mellitus is usually due to reactivation of an old focus rather than through fresh contact.
- Patients with diabetes mellitus and tuberculosis present with more advanced disease and have more changes in the lower lobes. For these reasons, tuberculosis is described as a complication of diabetes mellitus.
- Patients with tuberculosis and diabetes do not respond as well to tuberculosis therapy as those who are non-diabetic. The reason for this is unclear, but screening for and aggressively treating diabetes may improve the outcomes of patients receiving tuberculosis therapy
- Diabetes makes it more difficult to treat those who have both diseases: people with diabetes are more likely to fail treatment and more likely to die during treatment compared to those without diabetes.

- Patients with active tuberculosis and Type 2 diabetes are more likely to have multi-drug resistant TB.
- Diabetes may present more atypically in hyperosmolar hyperglycemic nonketotic coma or ketoacidosis in those with tuberculosis.
- If diabetes mellitus is not controlled, look for tuberculosis and if tuberculosis is not controlled, look for diabetes mellitus.

Mechanisms

Diabetes lowers the immune system, making diabetics more prone to infection and slower to heal particularly in patients with chronically high blood sugar. Diabetic people harboring the tuberculosis bacteria in their lungs are no longer able to keep it at bay and it goes from latent to active.

People with diabetes who have good glucose control are less likely to develop tuberculosis.

Screening for both TB and Diabetes

- Screening for tuberculosis in people with diabetes and screening for diabetes in people with tuberculosis could offer opportunities to increase detection and prevent diabetes or tuberculosis-related complications.
- If people with diabetes are checked for tuberculosis, more people will be found to have previously undiagnosed TB than in the general population.
- If people with tuberculosis are checked for diabetes, more people will be found to have previously undiagnosed diabetes than in the general population.
- Both diseases require early detection, providing guided standard treatment, and having an effective drug supply. The same measures can be applied to both diseases and help many people affected by tuberculosis and diabetes.

Recommended Actions

Screen every patient with tuberculosis for the presence of diabetes and every patient with diabetes for the presence of tuberculosis and thereby target primary prevention measures amongst them.

Both diabetes and tuberculosis are chronic illnesses, requiring close management and specialized care. If you have diabetes it is essential that you boost your immune system to avoid getting tuberculosis and other illnesses.

The following are recommended for people with diabetes and tuberculosis:

Control the blood sugar

High blood glucose levels harm white blood cells - the frontline soldiers in the battle against disease and illness.

Take your diabetes medication as prescribed and eat a healthy diet rich in low glycemic foods, such as vegetables, whole grains and fish.

Be more physically active

People who exercise regularly get about half as many respiratory infections as sedentary people. Exercise improves the immune system, and also releases stress and tension that undermine the immune system. It also helps to control blood glucose levels to further reduce the diabetes and tuberculosis risk.

Try to get at least 30 minutes of exercise five days a week or more.

Avoid chronic stress

Chronic stress suppresses the immune system and increases the odds of suffering from both diabetes and tuberculosis.

Get enough sleep

If the body does not get enough rest the number and efficiency of immune cells decreases. Diabetes can increase sleeplessness, but exercise helps to improve your sleep. For a better night's sleep try to go to bed at the same time every night, make your bedroom conducive to sleeping, have a comfortable mattress and pillows and have a warm (not hot) bath about one hour before bedtime.

Maintain Weight

Loss of weight is harmful, and high protein diet protects from mycobacterium. In diabetes mellitus with tuberculosis, it is recommended to allow calories as for standard weight (at least 2000-2400 kcal per day) irrespective of their absolute weight to ensure that patient is not in negative nitrogen balance, and also to adequately cover the insulin doses prescribed

Review drug requirements

Rifampicin accelerates the metabolism of oral hypoglycemic agents, as it is a potent hepatic enzyme-inducing agent.

Isoniazid antagonizes sulphonylureas and impairs insulin release and action, and rifampicin shortens the plasma half-life of sulphonylureas.

Leads to increased requirement of insulin and oral antidiabetic medication.

Use oral antidiabetic drugs carefully in tuberculosis

Tuberculosis affects both the liver and pancreas.

Oral antidiabetic drugs are contraindicated in hepatic disease, which is a common adverse effect of antituberculous therapy.

Metformin produces weight loss, particularly in high doses, and it is also an anorectic.

Marked weight loss and higher insulin and caloric needs in tuberculosis are other important indications for reviewing oral antidiabetic therapy in diabetes mellitus.

The recommendations are that diabetes mellitus and tuberculosis should be treated with insulin injection, or in case a diabetic with tuberculosis is on oral hypoglycemic agents, it may be necessary to switch to insulin.

Consider TB in sick elders

In the elderly, usual signs and symptoms in tuberculosis may be absent or show only a mild toxic reaction, with absence of fever or cough. Thus, masking of serious infection is likely in diabetes mellitus, facilitated by autonomic neuropathy and aging.

Elderly individuals aged 60 and older have four to five times the case rate of tuberculosis, and some of their immune deficits of aging could be the cause of tuberculosis.

Diabetes and pregnancy

Definition

Gestational diabetes (GDM) is defined as "any degree of glucose intolerance with onset or first recognition during pregnancy". Patients may have previously undiagnosed diabetes mellitus diagnosed coincidentally during pregnancy, or may have developed diabetes during pregnancy.

Gestational diabetes affects 3-10% of pregnancies, depending on the population studied.

Gestational diabetes usually shows up in the middle of pregnancy. Doctors most often test for it between 24 and 28 weeks of pregnancy.

Gestational diabetes usually goes away after pregnancy, but it may persist as type 2 diabetes. Many women who have had gestational diabetes will develop type 2 diabetes later.

Pathophysiology

The hallmark of GDM is increased insulin resistance. More insulin is needed to overcome this resistance. The production of insulin is about 1.5-2.5 times more than in a normal pregnancy.

Insulin resistance is a normal phenomenon emerging in the second trimester of pregnancy, and is thought to secure glucose supply to the growing fetus. Women with GDM have an insulin resistance which cannot be compensated with increased production in the β -cells of the pancreas. This causes inappropriately elevated blood sugar levels.

Placental hormones, and to a lesser extent increased fat deposits during pregnancy, seem to mediate insulin resistance during pregnancy.

In untreated gestational diabetes the fetus is exposed to consistently higher glucose levels. This leads to increased fetal levels of insulin. The growth-stimulating effects of insulin can lead to excessive growth and a large body. After birth, the high glucose environment disappears, leaving these newborns with ongoing high insulin production and susceptibility to low blood glucose levels (hypoglycemia).

Presentation

Typically, women with GDM exhibit no symptoms (another reason for universal screening) and it is most commonly diagnosed by screening during pregnancy. Some women may demonstrate increased thirst, increased urination, fatigue, nausea and vomiting, bladder infection, yeast infections and blurred vision.

Risk factors

Classical risk factors for developing gestational diabetes are:

- A previous diagnosis of gestational diabetes or prediabetes, impaired glucose tolerance, or impaired fasting glycaemia
- A family history revealing a first-degree relative with type 2 diabetes
- Maternal age - a woman's risk factor increases as she gets older (especially for women over 35 years of age).
- Ethnic background (Africans and South Asians)
- Being overweight, obese or severely obese increases the risk by a factor 2.1, 3.6 and 8.6, respectively.
- A previous pregnancy which resulted in a child with a macrosomia (high birth weight: >4kg)
- Previous poor obstetric history.
- Polycystic ovarian syndrome.

In addition to this, statistics show a double risk of GDM in smokers. About 40-60% of women with GDM have no demonstrable risk factor; for this reason many advocate to screen all women.

Diagnosis

Routinely screen all pregnant women over 30 years and those below 30 years if they present with the above risk factors..

Tests for gestational diabetes at around 24 – 28 weeks gestation.

Normal blood glucose values:

- Fasting <6.1mmol/l
- 2-hour postprandial (2hr after a meal) <7.8 mmol/l
- Random glucose test <6.1 mmol/l

Urinary glucose testing

Increased glomerular filtration rates during pregnancy contribute to some 50% of women having glucose in their urine on dipstick tests at some point during their pregnancy. The sensitivity of glucosuria for GDM in the first 2 trimesters is only around 10% and the positive predictive value is around 20%.

How can diabetes affect the health of the pregnant woman?

A woman with gestational diabetes whose blood sugar stays high has an increased chance of:

- Preeclampsia (high blood pressure, protein in urine, increased swelling)
- Preterm birth (baby born before 37 weeks)
- Caesarian section

In a woman with preexisting diabetes (which includes type 1 and type 2), blood sugar that remains high can trigger or worsen certain health problems, including:

- High blood pressure
- Preeclampsia
- Kidney disease
- Nerve damage
- Heart disease
- Blindness

Also, a woman with preexisting diabetes whose blood sugar remains high has an increased chance of:

- Miscarriage
- Preterm birth
- Stillbirth
- Deliveries using forceps, ventouse or caesarean section or problems during vaginal delivery (such as shoulder dystocia)

How can diabetes affect the baby's health?

Blood sugar that remains high in a pregnant woman with diabetes can cause her baby to have the following health problems:

- Birth defects, especially of the brain, spine, and heart
- Increased birth weight if unmanaged (may affect 12% of normal women compared to 20% of patients with GDM)
- Intrauterine growth retardation if managed
- Nerve damage to the shoulder during delivery
- Low blood sugar after birth (may require admission to a neonatal care unit)
- Jaundice
- Increased chance of overweight, obesity, and/or diabetes later in life
- Dysmature babies prone to respiratory distress syndrome due to incomplete lung maturation and impaired surfactant synthesis.

Offsprings of GDM mothers are prone to developing childhood obesity, with type 2 diabetes later in life.

What should a mother do to prevent health problems related to diabetes during pregnancy?

- **Plan the pregnancy.** Women with diabetes should have good control of their diabetes before getting pregnant.
- **See a doctor.** Get advice about any complications of diabetes that may be present, getting and keeping control of the blood sugar, change medications if needed, and plan for frequent follow up.
- **Monitor blood sugar often.** Pregnancy affects blood sugar control and one may need to check blood sugar more often than when not pregnant.
- **Control and treat low blood sugar quickly.** Having tight blood sugar control can lead to a chance of low blood sugar at times. Keep a ready source of sugar, such as glucose tablets or gel or hard candy, on hand at all times.
- **Follow up with the doctor regularly.** You will need to see your doctor more often than a pregnant woman without diabetes so as to prevent or catch problems early.
- If you had gestational diabetes, check blood sugar checked 6 to 12 weeks after delivery and every 1 - 3 years. Continue to exercise and eat a healthy diet after pregnancy to prevent or delay getting type 2 diabetes.

Management

Lifestyle

Diet needs to provide sufficient calories for pregnancy with the exclusion of simple carbohydrates so as to avoid peaks in blood sugar levels. This can be done by spreading carbohydrate intake over meals and snacks throughout the day, and using slow-release carbohydrate sources. Since insulin resistance is highest in mornings, breakfast carbohydrates need to be restricted more. Ingesting more fiber in foods with whole grains, or fruit and vegetables can also reduce the risk of gestational diabetes.

Regular moderately intense physical exercise is advised.

Self monitoring can be accomplished using glucose meters. Target ranges advised by the Australasian Diabetes in Pregnancy Society are as follows:

- fasting capillary blood glucose levels <5.5 mmol/L
- 1 hour postprandial capillary blood glucose levels <8.0 mmol/L
- 2 hour postprandial blood glucose levels <6.7 mmol/L

Breastfeeding possibly reduces the risk of diabetes and related risks for both mother and child.

Medication

Insulin is the preferred choice of treatment for GDM, however, certain oral glycaemic agents are significantly less dangerous to the developing fetus than poorly controlled diabetes. Glibenclamide a second generation sulfonylurea, has been shown to be an effective alternative to insulin therapy. Metformin (alone or combined with insulin) has been shown to be safe and equally effective as insulin.

A repeat OGTT should be carried out 6 weeks after delivery, to confirm the diabetes has disappeared. Afterwards, regular screening for type 2 diabetes is advised.

Prognosis

Gestational diabetes generally resolves once the baby is born. However, women diagnosed with gestational diabetes have an increased risk of developing diabetes mellitus in the future, as follows:

- The chances of developing GDM in a second pregnancy are between 30 and 84%, depending on ethnic background.
- A second pregnancy within 1 year of the previous pregnancy has a high rate of recurrence.
- The risk is high in women who needed insulin treatment, women with more than two previous pregnancies, and women who were obese.
- Women requiring insulin to manage gestational diabetes have a 50% risk of developing diabetes within the next five years.

Children of women with GDM have an increased risk for childhood and adult obesity and an increased risk of glucose intolerance and type 2 diabetes later in life. This risk relates to increased maternal glucose values.

Educate patients and family members

INTRODUCTION

Non Communicable Diseases are chronic illnesses requiring long term care and adherence to lifestyle measures, medication and appointments is essential. Following diagnosis, every patient and their family/ treatment supporter should learn about lifestyle preventative measures for cancers, Chronic Obstructive Pulmonary Diseases, diabetes and/or hypertension etc) and their management.

SESSION OBJECTIVES

By the end of this session you will be able to educate the patient and family about:

- Healthy eating and increasing activity for prevention of cancers, diabetes and cardiovascular diseases
- Early detection of the common non communicable diseases.

Healthy Eating for All People

A healthy diet plays a crucial role in prevention of non communicable diseases (diabetes, cancer, CVD, hypertension) and associated risk factors such as obesity, raised blood pressure, lipid and glucose. It is therefore important to follow the recommendations for healthy eating which involves variety, moderation and balance of food intake from the following food groups to improve on their existing eating habits

- Cereals, roots tubers and cooking banana (every day most meals)**
 - This group include cereal based foods i.e. maize, wheat, rice and finger millet, roots i.e. such as cassava and yam, tubers such as potatoes and all cooking banana.
 - Cooked food includes chapatti, ugali and bread.
 - These are the main source of energy for each moderate meal with minimal processing.
- Legumes, nuts and foods of animal origin (3 times a week)**
 - This group include legumes i.e. beans, nuts i.e. ground nuts and sunflower seeds. Meat (remove visible fat), eggs (max 2/day), fish and milk (skimmed or 2%) are of animal origin and have cholesterol and saturated fat
 - Also indigenous insects such as *senene* and *kumbikumbi*

- Main source of protein which is important for body building, repair and maintenance.
- **Vegetables (every day with peel if possible)**
 - Includes Green leafy vegetables i.e. cassava and potato leaves, red and orange vegetables i.e. tomatoes and carrots, and other vegetables of different shapes and colours such as pumpkin, cucumber, okra, as well as indigenous vegetables i.e. bitter tomatoes.
 - Vegetables are the main source of vitamins and minerals important for immune strengthening against diseases.
- **Fruits (every day with peel if possible)**
 - This group include all fruits such as mangoes, pineapples, apples and indigenous i.e. baobab fruit and tamarind
 - Fruits are also the main source of vitamins and minerals important for immune strengthening against diseases.
- **Fat and oil (minimal daily)**
 - Oil recommended for use is vegetable oil such as corn and sunflower oil
 - Fats and oils are important for absorption of vitamins and in some cases as a source of energy. However diet high in saturated fat e.g. red meat and trans fat such as plant oil that is solid at room temperature e.g. margarine enhance obesity and CVD
 - Try to avoid the use of oil high in saturated fat such as palm oil and coconut milk.
- **Dietary fibre (daily)**
 - Important part of food
 - Dietary fibre has cholesterol lowering effect
 - To increase fibre content have minimally processed or unprocessed food or flour

General recommendations

- Increased intake of fruits and vegetables is associated with a protective effect of most types of cancers
- Whole fruit is more protective from cancer than supplements
- Dietary fibre, e.g. consumption of whole grain, has been associated with a lower risk of colon cancer
- Regular physical activity improves lipid profile and has many other benefits (see section on physical activity)
- Avoid caffeine containing drinks such as coffee because can increase blood pressure
- Smoking is a major risk factor for CHD and lung cancer and no one should smoke
- Increased alcohol and tobacco intake increase risk for cancer proportionately.
- Avoid partially hydrogenated vegetable oils, trans fatty acids and canned foods (Encourage reading food labels whenever applicable).

Physical Activity (daily)

Physical activity is defined as any bodily movement produced by skeletal muscles that require energy utilization. Physical activity includes exercise (planned, structured, repetitive, and purposeful) as well as other activities which involve bodily movement and are done as part of playing, working, active transportation, house chores and recreational activities.

Physical inactivity (lack of physical activity) has been identified as the fourth leading risk factor for global mortality (6% of deaths globally). It is estimated that physical inactivity contributes to approximately 17% of heart disease and diabetes, 12% of falls in the elderly, and 10% of breast cancer and colon cancer.

Benefits of Physical activity

- Helps adults to manage body weight by preventing unhealthy weight gain or to loose weight
- Achieve physical fitness including cardiovascular fitness (by increasing cardiac volume or myocardial thickness), flexibility of joints, muscle strength and endurance and building and maintaining healthy bone density.
- Boosts the immune system
- Helps prevent the "diseases of affluence" such as heart disease (hypertension, stroke, myocardial infarction), lipid abnormalities (triglycerides and HDL cholesterol), Type 2 diabetes and obesity.
- Improves mental and psychological health by reducing depression, anxiety and stress
- Improves musculoskeletal conditions such as osteoarthritis and low back pain;
- Helps control risky behaviours particularly among children and young people (e.g. tobacco use, alcohol / substance use, unhealthy diet and violence).
- Benefits communities through increased productivity in the workplace, lower worker absenteeism and turnover and better performing schools.

Remember that regular and adequate levels of physical activity in adults are a key determinant of energy utilization, and thus fundamental to energy balance and weight control.

Activities which involve using the large muscles of the arms or legs help the lungs, heart and circulation by making the heart work more efficiently during exercise and at rest. Such activities include brisk walking, stair-climbing, jogging, running, bicycling, rowing, swimming, jumping rope, dancing and activities such as football and basketball that include continuous running. For benefit, they need to be performed for at least 30 minutes on most days of the week at 50–85 percent of one's maximum heart rate. The maximum heart rate is roughly 220 minus Age (in

years). For example, for a person aged 60 years, the maximum heart rate is $220 - 60 = 160$: 50% would therefore be $160 \times 50\% = 80$ beats per minute.

When starting an exercise program, aim at 50% of the maximum heart rate during the first few weeks and gradually build up to higher levels. After six months or more of regular exercise, you may be able to exercise comfortably at up to 85 percent of your maximum heart rate. However, you don't have to exercise that hard to stay in shape.

Tips for increasing physical activity

Make physical activity a regular part of the day. Choose activities that you enjoy and can do regularly. Fitting activity into a daily routine can be easy - such as taking a brisk 10 minute walk to and from the parking lot or bus stop. Make sure to do at least 10 minutes of the activity at a time, shorter bursts of activity will not have the same health benefits. To be ready anytime, keep some comfortable clothes and a pair of walking or running shoes in the car and at the office.

More ways to increase physical activity

- Form or join a walking group in the neighbourhood. Recruit a partner for support and encouragement and/or get the whole family involved.
- Clean the house or wash the car.
- Walk, jog or cycle more, and drive less.
- Do stretches, exercises, or pedal a stationary bike while watching television.
- Mow the lawn with a push mower.
- Plant and care for a vegetable or flower garden
- Play with the children e.g. dance to favourite music.
- Get off the bus one stop early and walk the rest of the way.
- Replace a coffee break with a brisk 10-minute walk. Ask a friend to go with you.
- Take part in an exercise program at work or a nearby gymnasium.
- Join the office sports team: play football ball, tennis, squash, basketball or soccer.
- Hand cycle or play wheelchair sports.

Most important – have fun while being active!

When should I consult my doctor?

See your doctor or other healthcare provider if any of these apply to you:

- You have a heart condition or you have had a stroke.

- During or right after exercise, you often have pains or pressure in the left or mid-chest area, left neck, shoulder or arm.
- You have developed chest pain or discomfort within the last month.
- You tend to lose consciousness or fall due to dizziness.
- You feel extremely breathless after mild exertion.
- You take medicine for blood pressure, a heart condition or a stroke.

Read pg 5–10 of the desk guide.

Early Detection of Cancers

Individuals may present with the following signs and symptoms

Breast Cancer

- Changes in size, shape, feel of breast
- breast lump or thickening on breast or armpit
- nipple/skin retraction
- nipple discharge
- eczema like breast skin
- axillary lump

Cervix Cancer

- Vaginal bleeding
 - Postcoital
 - intermenstrual
 - postmenopausal
- Vaginal discharge
- Lower abdominal pain

Colorectal Cancer

- change in bowel habits
 - Persistent diarrhoea
 - Constipation or obstruction
- rectal bleeding
- weight loss

Prostate Cancer

- Urinary frequency,
- irregular urine flow,
- hesitancy (strong urine sensation combined with difficulty starting urination)

People over 50 years who attend should systematically be asked about these features if they do not freely complain about them.

Educating the patient about diabetes

Informing a patient about their diabetes diagnosis is a sensitive task. News about suffering from diabetes is generally unwanted and difficult for the patient.

There can be considerable social stigma relating to diabetes, with negative social consequences for patients and their families, especially for women. Many patients prefer to deny reality, and choose not to acknowledge that they have diabetes.

You should try to give information to suit the personal and social situation of your patient. It is important to ask about their existing knowledge, and then explore any misunderstandings. Counsel them, starting from this level of knowledge. Through your questions and discussion, find out their state of mind following diagnosis. They may be “numb” and in denial at first, and not take in very much at this stage.

Read the about education information to explain diabetes treatment in desk guide pages 5-10, then read the page below and then do the role-play exercises.

Educate about healthy eating. Many people think that patients with diabetes must go on a special diabetes diet and buy special diabetes foods. Actually we now know that the advice on healthy eating is the same for diabetes (and those with hypertension etc.) as for people without these conditions – it is only that subjects with diabetes need to do it more strictly. That is, they should eat:

- regular meals; breakfast, lunch and evening meal - evenly through the day
- vegetables and fruit – at least 3 portions of fruit and 3 portions of vegetables a day
- brown bread, rice etc. – that is, complex unrefined carbohydrates
- minimise sugar, fats and salt – processed foods often contain too much of these
- take regular activity – as part of normal life.

Eating habits are difficult to change. The advice should be around the person’s existing eating habits and routine rather than absolute change to completely different diet.

Diabetes, hypertension etc. are long-term illnesses and adherence to medication and appointments is essential. At the time of diagnosis counsel on the essential minimum of information on diabetes care and life style changes. At each visit you should ask about and discuss these and other information. Do not assume because you have said it previously that it is remembered or understood. Each visit start from what they know, reinforce and then add to their knowledge and understanding.

Tell patients’ that they can visit their treatment centre whenever the need arises.

Patients must visit the health centre following the first and second months of treatment for clinical and blood glucose evaluation. The date of the next glucose examination should be recorded on the Treatment card. Patients should be advised where and when the blood glucose will be taken and why it is important for them to attend

KEY POINTS

- The health worker must make sure that patients understand the information provided
- Give the patient an opportunity to share their concerns about their illness.

PRACTICE EXERCISES



These exercises enable us to educate a patient with diabetes about their illness. We will use the desk guides pages 5-10 to ensure that we do not forget important issues.

- Each group of 3 should split into participants A, B, and C, and then take turns to play the role of the health worker, the patient, and the observer.
- An introductory paragraph below sets the scene.
- Read the instructions for when you are a health worker or observer. When it is your turn to role-play the patient, look at the next page and read the case examples before starting each practice exercise.
- Each education practice consultation should last about 5-10 minutes, followed by a few minutes feedback from the observer.

When you are the health worker

Read again pages 5-10 of the desk guide. Keep the pages open and glance at it to ensure that you do not forget important points to educate and counsel about. Counselling is a two-way conversation – use the communications skills you learnt in the earlier session. Be sympathetic. Be open to addressing their concerns, let them talk, but kindly steer the conversation to the most relevant issues, mention the key points.

You are the observer

Read again pages 5-10 of the desk guide. Keep the pages open and glance at it to ensure that you do not forget important points to educate and counsel about. Counselling is a two-way conversation. Remember the points in the section above on consultation skills which will help in this exercise. Note down some good and “could be better” communication skill points to mention after the role play. Follow the points on pages 5-10 of the desk guide. Note down points relating to the consultation. Remember to be specific and constructive in your feedback.

When you are the patient

Try to play the role – imagine how this person would think and speak, and act them. Use their way of talking, expressions and concerns. Listen to what the health worker says, but also mention your concerns according to the case study notes below (and any others you think may be applicable to this person).

Now look at the next page for your case study patient (1, 2, or 3).

Role-play 1: You are the newly diagnosed patient with diabetes

You are Hadija a 45 year old woman with three children still at home in your poor slum area of Kadoma. You grow some food in your garden. Your husband has irregular work on building sites, at other times he's at home. You've just been told the blood glucose tests confirm diabetes. You've been ill, and still feel unwell. Your father had a stroke when he was about 60. Your mother is comfortably large, diagnosed with "sugar" and takes tablets "when she needs to"; but recently she has pain in the legs when she walks. You are coming to terms with the diagnosis slowly. You have been told that diabetes is a life-long condition, and fear the complications. You had been hoping for some injections or tablets to cure the disease and make you well quickly so you can get back to work. But, yesterday, the doctor only advised healthy eating and increased activity - but walking is tiring due to your weight and the heat. You were disappointed when the doctor said that only after some months they would repeat the blood tests, and *maybe* only then give you some tablets. You also worry about the cost of the tablets and the travel away from work to the hospital for treatment. Hear what health worker tells you, ask questions, but also mention about these concerns so he/she can address them.

Role play 2: You are the newly diagnosed patient with prediabetes

You are Peter Mbaruku, aged 42 years, previously a soldier, and now living near the compound of a government minister's house in Dodoma where you keep guard at night. It is a boring but steady job. You are the youngest son of a family that live in the village who have had a good living from their farm. You used to eat fruit and vegetables in the village. You were slim and fit in the army. Now you stand around all day, and enjoy the city food you buy from the street vendors. Your doctor told you about you about having prediabetes and you are concerned about the diabetes and its complications he mentioned. Until recently though over weight, you felt well, and met a divorcee woman who is 12 years younger than you and are engaged to be married. You are worried about what to say to your fiancé, and your employer. You are determined to do what it takes to get well and stay well, but money for treatment is a concern. You are determined to cut out sugar from your tea, maize porridge and stop eating biscuits.

Role play 3: You are the newly diagnosed patient with diabetes

You are Salim who sell cigarettes, matches, biscuits on the streets of Dar. You had hoped by your age (in your later 50s) that you'd be looked after by your own children, but they got ill and died with HIV and TB. You now rent a two room house with your wife and four grandchildren in a poor slum off the Morogoro road 6 kilometres away – you take the *daladala* each day into central Dar. Money is always a problem. You sit by the road side, keeping a sharp look out for customers from dawn to dusk, and for meals eat some of your biscuits and buy fried food of the street vendors. Lately your concentration has been poor; always looking for

somewhere to urinate, losing weight, and feeling weak. But you've kept going, until you got too dizzy, sick and had skin boils and went to the clinic. Now you've been told you have diabetes. You don't have much money, and need to get back to selling things soon.

Everybody reads the Key points (below) and the facilitator will help if there are any unanswered questions in relation to the role plays for education

KEY POINTS

All patients who have been diagnosed with diabetes (and associated conditions such as hypertension) must be carefully educated about their illness.

The most important educational messages are:

- Unhealthy lifestyle and obesity can contribute to diabetes (and hypertension etc.) – eat healthy diet and make sure you are active
- Diabetes is controllable - you can avoid complications if lifestyle is changed and you take all your drugs correctly
- Anybody can get diabetes, but some people get diabetes when they become overweight, do no activity and have a family history of diabetes
- You can not confirm if you have diabetes without doing a blood glucose test.
- Everybody should prevent themselves from getting diabetes by increasing activity and eating healthy with plenty of raw fresh fruits and vegetables.

If you have diabetes, members of your family may also have the disease – if any one in your family is fat, or has had a heart attack or a stroke ask them to go to the health centre to be checked for possible diabetes, high cholesterol or high BP.

Supervision and support of treatment

INTRODUCTION

Non communicable diseases are a life-long condition. Adherence to treatment is essential if they are well and to avoid complications. It is essential for a family member, friend or community worker be chosen to support their treatment.

SESSION OBJECTIVES

At the end of this section you will be able to:

- Understand Treatment Support by a family member
- Educating the patient about Treatment Support.
- Identifying an appropriate Patient Supporter.
- How to Support Treatment
and
- Understand Treatment supervision by the health worker
- Manage follow-up appointments
- Supervise the treatment supporter.

Educating the patient about Patient Support

It is very important to discuss with the patient how treatment will be best organized to suit their lifestyle.

Treatment supporters encourage patients to take the right tablets at the right time, the right number of times a day which will increase the chances of the patient being controlled. Patients who take only some of the drugs irregularly may continue to get complications.

There are some essential points that we need to consider in detail. Please read about treatment support, page 31 of the desk guide.

As well as patient support, all patients will be supervised by a health worker when they attend for their 3 *monthly* follow-up consultations at the treatment centre.

Identify an appropriate patient supporter

Each setting will have different options when choosing a treatment supporter. In discussion with the patient, the health worker will be able to identify a suitable treatment supporter. Treatment supporters should be accessible, acceptable, committed and concerned about (but can influence) the patient.

Commonly, they will be a family member. In some settings, a community health worker or other community volunteer or a friend will be the best choice.

After helping choosing the treatment supporter, ask the patient to bring the treatment supporter to the primary care centre so they and their treatment supporter can hear more about their treatment and the role of treatment support.

Generally the treatment support will be in the patients home, but the patient and supporter may agree to meet in another convenient place (e.g. at work).

When the treatment supporter and patient come to the primary care centre, explain the role of a treatment supporter (page 31 of desk guide) and also explain about diabetes (and/or other e.g. hypertension) – this will be reinforcing the messages to the patient. But this is good, as patients need time and repetition of the key messages in order to learn, accept and act on the messages.

Use the desk guide to educate the treatment supporter about diabetes and patient support.

Explain how to Support Treatment

Most people with NCD find it difficult to take treatment because of side effects, or simply because there are so many other things to think of and do in life. Your role as a treatment supporter is to be there for them, support them, encourage and remind them how important it is to take the drugs regularly. You will help them take tablets correctly and help them to attend all their appointments.

Arrange a time and place to meet e.g. in the morning when the patient takes their tablets. Make this an enjoyable occasion. Learn the correct type and number of tablets. If you are present when they take their tablets, watch while they do so, notice if they take the right number and kind of tablet (and are not missing out any).

Every week, with the patient, count the tablets missing from the blister pack, to check that the right numbers have been taken. Complement them when they are doing it right.

If it appears that tablets have been missed, ask about what happened, why it happened and what can be done in the future. Agree with them about how to avoid missing tablets again.

Do not get angry if they miss treatment, but remind them how tablets should be taken.

Be positive, that they can have good blood glucose control if they take the tablets correctly and attend the appointments.

Continue to look and ask to make sure that that tablets are taken properly. If not taken, then talk again and encourage them. But if this problem continues, or if the

patient disappears, then inform the health worker.

If they go away for some days, ask if they have enough tablets for the length of time they will be away.

Remind them of the date to attend the follow-up appointment and take their all their tablets and empty tablet blisters with them.

Supervision of treatment supporters at follow-up appointments

The treatment supporter must understand the importance of the e.g. three monthly follow-up appointments at the primary care centre. The treatment supporter should remind the patient to attend, to take their treatment card, tablets and empty packs to the health unit - so the health worker can see how treatment has been taken. The treatment supporter should accompany their patients if possible, especially if there are any problems to discuss with the health worker. They and the patient should be reminded of key points about diabetes (and associated conditions) and its treatment.

The treatment supporter has a key role in the early identification of defaulting patients. The treatment supporter should enquire about these things and also enquire about the health of the patient, so as to detect any new symptoms which may be side effects of the tablets.

The patient supporter should take specific action if the patient has failed to take their treatment.

Thank the treatment supporter: Assure them that their efforts have an important impact on the patient's treatment. Thank them for giving considerable time and effort, which is greatly appreciated.

Take action if patient supporter fails to carry out their role find out the problem, and advise the patient and treatment supporter on solve the problem. If necessary, help the patient choose another treatment supporter.

KEY POINTS

- The best person to be a patient supporter should be living nearby, available, concerned, committed/ reliable.
- The treatment supporter should be chosen during joint discussion between health worker and the patient.
- A treatment supporter can only fulfil this role successfully if they are properly trained and supported (e.g. moral support)
- Helping with the choice and training of the treatment supporter is consequently one of the most important tasks for the health worker.
- A family member, community health worker, a friend, community volunteers can all be good treatment supporters.
- If possible, for example with family member supporters, be there at the time the patient takes their tablets and observe the patient taking the tablets.
- The treatment supporter should look at the tablet pack to see that the number of tablets is correct for the number of daily doses that should have been taken.
- The treatment supporter should inform the health worker if the patient stops taking their tablets.

GROUP WORK



ASK IF THERE ARE ANY QUESTIONS. DISCUSS, for around 10 minutes if required.

PRACTICE EXERCISE

We have already discussed the importance of establishing with a patient the individual who might be the most appropriate patient supporter. This exercise you will practice discussing with the patient who are the best (most available, concerned and reliable) people, and help them decide which person is the most appropriate,

We will now spend some time practising the skills involved in this:

- Get back into your groups of three.
- An introductory paragraph below will set the scene for each exercise
- There are two exercises. Take turns adopting the role of patient, health worker, and observer. It is OK to repeat an exercise with different roles as each participant will have different strengths and weaknesses.
- This time you will all work from the same page.
- Turn to the relevant page to prepare
- Each practice should last approximately 5 minutes.
- The patient will then give structured feed back about the consultation to the person playing the role of the health worker.

When you are the health worker

Read again pages 20 of the desk guide. Keep the pages open and glance at it to ensure that you remember the points about Treatment support and helping the patient choose who will be best. Remember counselling is a two-way conversation – use the communications skills you learnt in the earlier session. Be sympathetic.

When you are the observer

Read again pages 20 of the desk guide. Keep the pages open and glance at it to ensure that you do not forget important points to educate and council about. Counselling is a two-way conversation. Remember the points in the section above on consultation skills which will help in this exercise. Note down some good and “could be better” communication skill points to mention after the role play. Follow the points on pages 20 of the desk guide. Remember to be specific and constructive in your feedback.

When you are the patient

Try to play the role – imagine how this person would think and speak, and act them. Use their way of talking, expressions and concerns. Listen to what the health worker says, but also mention your concerns according to the case study notes below (and any others you think may be applicable to this person).

Now look at the next page for your case study patient (1 and 2).

Role play 1: You are the newly diagnosed patient

You are Hadija Abubakari, a 45 year old married housewife. (You were diagnosed with diabetes after screening – because you came to the health centre with repeated episodes of vaginal infection, frequency of urination and thirst). You have 3 children who are now grown up.

You live with your husband, who is a good man. You also live with an unmarried adult son (who is often at the beer hall) and a serious and loving daughter. You are well liked by other women in the area. There is a community health worker who lives in the next village a kilometre away.

Role play 2: You are the newly diagnosed patient

You are Salim who sells cigarettes, matches, biscuits on the streets of Dar. You had hoped by your age (in your later 50s) that you'd be looked after by your own children, but they got ill and died with HIV and TB. You now rent a two room house with your wife and four grandchildren in a poor slum off the Morogoro road 6 kilometres away. Now you've been told you have diabetes and have come to the clinic to discuss selecting a treatment supporter. You are anxious about this. You are close to your wife but you don't want her to worry about your health as she is still coming to terms with the deaths of your children. You have several male friends who are also street sellers but most of them smoke and drink alcohol.

Educate the treatment supporter

When the patient has chosen the treatment supporter, ask them to bring that person to the primary care centre. Confirm that the treatment supporter is willing to take on this role.

Educate the treatment supporter (best with the patient as well as a reminder) explain about NCD, diabetes, healthy eating, activity and follow-up care, using Education information – Healthy eating” pages 5-10 of the desk guide.

Then using the desk guide page 31, to remind you of the key points, discuss role of a treatment supporter.

KEY POINTS

- Help the patient choose the best person to act as treatment supporter for them; who is easily accessible, concerned and reliable.
- The treatment supporter needs education about NCD, diabetes and training to be a good supporter.
- Most people who agree to be a treatment supporter will have some concerns. It is important that the care provider finds out about these concerns and discusses them at the beginning of the treatment.
- All treatment supporters need to be “prepared” for the role.
- It is important that the treatment supporter agrees to take responsibility for each individual patient.
- The treatment supporter has as important role to play in the early detection of defaulters, patients who refuse treatment and people who are having problems with their treatment.

Patient follow-up at treatment centre

INTRODUCTION

The treatments for diabetes and hypertension are for life. Therefore it is mandatory to follow up all the patients with diabetes. In the previous session we have discussed initial management with emphasis on lifestyle changes before commencing drugs.

Please refer to the new draft treatment card.

SESSION OBJECTIVES

By the end of this session you will be able to:

- Take a quick history about patient's symptoms, life style changes and tablet taking at each visit
- Carry out the relevant examination,
- Understand the need to do BP, weight and waist measurement
- Recognise that a blood glucose test is necessary at each visit
- Alter or add medications based on BG, BP and weight results
- Offer an appointment at 3 months time
- Know steps for annual check
- Record consultation in treatment card and patient card

Read about follow-up of patients page 24-25 of desk guide

Adherence: ask open questions about any problems they are having for taking their medication, and if needed, ask direct (closed) questions about tablet taking and reasons for any poor adherence. Don't criticise, but discuss/ advice.

Look at the medication *e.g. metformin blister packs*, to see if sufficient taken since last visit. Discuss if any problems taking treatment each day.

Look at the Treatment Card

At each routine visit

Ask about symptoms, look for signs and do the appropriate tests. Ask if they have had **ANY new symptoms** (not only ones they associate with diabetes) since the last visit (e.g. angina, heart failure, changes in weight, visual symptoms, family, drug, new pregnancy or delivery. Ask if taking new medication, including any over-the-counter (from a drug shop), steroids, oral contraceptives or herbal remedies. Ask about smoking habits, alcohol intake and lifestyles (diet and activity).

If symptomatic follow the steps below, examining e.g. the chest, if chest symptoms. Ask about, and if symptoms examine:

Cough, shortness of breath, palpitations or chest pain, if present then: listen and feel for murmurs or irregular heart beat. Listen for coarse crepitations of pneumonia, or fine crepitations of heart failure. Feel the peripheral pulses. If signs found, then do an ECG if available. **Refer** to a physician if positive signs.

Blurred vision, redness or other sign of infection, or cataract if present (and should examine routinely every year) – if feasible do or refer for ophthalmoscopy with dilated pupils with 2.5% phenylephrine or 1% tropicamide, or cyclopentolate eye drops:

Look for arteriole venous nipping, soft or hard exudates, haemorrhages, retinal detachment, new vessel formation, Visual disabilities due to diabetes retinopathy, or glaucoma. **Refer** to ophthalmologist if any abnormalities detected.

Central neurological: Ask about any symptoms e.g. of recent weakness, e.g. of face or limbs (TIA), speech or swallowing difficulties. **Refer** to hospital doctor if present.

Problems with feet ask and examine for

- Hygiene, thick and dry skin, signs of infection: skin or joint redness, warmth, swelling, ulcer, maceration (athletes feet), nail infection, blue or black feet or toes.
- numbness, tingling, ants crawling under the feet or pins and needles sensations, claw foot or deformity (neuropathy)
- Assess whether shoes are properly fitting and examine the soles of feet for callus
- Signs of poor blood flow; blue colour, lack of hair, skin break (ulcer). **Refer** ulcers to a surgeon if available, otherwise to a physician/doctor.

If indicated by symptoms and signs do a creatinine and electrolytes, total cholesterol, *triglycerides and full blood count*. If not indicated do the tests as routine only annually (see below).

See below for interpretation and action.

Whether **asymptomatic** or **symptomatic** carry out the following:

1. Weight and waist measurement (plus, yearly, calculate *waist hip ratio* and BMI (Weight in Kg/Height m²))
2. Blood pressure - hypertension in diabetes is >130 /80mmHg on three separate occasions

3. Urine dipstix for ketones, blood, protein. If protein is positive check for urine infection (look at the urine glucose if no blood glucose test available)
 - If urine test positive for protein** on two occasions; do creatinine;
 - If creatinine normal <160micromol/L start ACEI
 - if abnormal refer to **physician**
4. Blood (as available)
 - FBG or RBG or *HbA1c according to availability.*

Each year do or arrange a more thorough check up: Ask for symptoms relating to complications, and if present examine that system (preferably examine cardiovascular, respiratory neurological system and eyes anyway). Ask full history of angina, heart failure, hypertension, smoking, high blood lipids (fats), obesity, visual symptoms, family, drug, alcohol, past and gestational history. Refer if complications found which you can't deal with.

Do, if available, the urea, electrolytes, liver enzymes, serum cholesterol annually.

Supervise the treatment supporter

Meet the treatment supporter if possible when they come to the treatment centre or when you visit the village. During the supervision meeting with the treatment supporter, ensure the following are done:

- Ask for the Patient's Treatment Card and Update the Treatment Card:** Check the patient is taking the drugs on schedule and that the card is correctly completed.
- Identify and discuss any problems:** Ask the treatment supporter if there were problems in the last month (e.g. drug side-effects, missed days, reluctance to take drugs). Discuss solutions.
- Review the treatment supporter's tasks:** Check the treatment supporter's understanding of diabetes and supporting treatment. Review and provide key information as needed.
- If the treatment supporter has come to collect drugs, re-supply them:** Read the card to identify the drugs needed in the next month. Take the drugs from the patient's drug box kept at the health centre. Record on the original *Diabetes Treatment Card* the drugs provided to the treatment supporter.
- Thank and give support to the treatment supporter:** Assure them that their efforts have an important impact on the patient's diabetes treatment. Thank them for their time and effort, which is greatly appreciated.
- Take action if treatment supporter fails to carry out their role:** If the patient or treatment supporter fails to visit the health centre to collect the next month's drugs, promptly make a home visit to the patient and to the treatment supporter, to find out the problem. Ensure that the patient receives the treatment as soon as possible.

KEY POINTS

The patient with diabetes needs follow up for life.

There is 3 monthly follow up for

- new symptoms
- related examination
- drug compliance
- glucose control by blood glucose test
- BP and waist/ weight control
- next appointment
- recording all the data

There is annual follow-up routine which are carried out in addition to steps at 3 monthly follow-up:

- History related to complications of diabetes, high lipids and high BP
- Systems examination – cardiovascular, neurological, eyes and feet
- Drug compliance- add or alter dose of drugs according to examination
- Annual blood tests includes RBG, HBA_{1C}, total cholesterol, *liver enzymes, urea, creatinine and electrolytes*

A patient who has missed appointment or has missed treatment must be contacted and motivated to attend and take treatment.

The treatment supporter must send any patient complaining of a new symptom to the treatment centre immediately.

We can detect a patient who has failed to take treatment if they say they've missed treatment, or their tablet pack includes too many tablets (too few empty blisters), or they fail to attend for review appointment at the treatment centre.

The treatment supporter may come when the patient comes for review. If this is the case, remember the two distinct objectives:

1. To review the patient
2. To support and supervise the treatment supporter

Written and Role Play Exercise



This exercise has 4 parts. First you will complete a written exercise to help you prepare for a routine, follow-up appointment for diabetes. Then you will split into your groups of 3 and role play the first part of the consultation, to practise taking the history and reviewing the medication. Then you will read some further information about the case and answer questions to help you to decide what management steps you would take for this case. Finally you will role play the second half of the consultation, where you will practise making appropriate changes to the treatment and explaining these to the patient.

Hadija Akubari

Remember Hadija, the 45 year old housewife with 3 grown up children. Over the last 18 months she has struggled to cope with her diabetes. She has not lost any weight. Her blood pressure has been high on the last two visits but you have not yet started any medication for this. She currently takes metformin 500mg twice daily and also gliclazide 60mg daily.

Below is the treatment register, with the results from previous attendances:

Hadija Akubari: DOB 1/4/1956

Date	Blood Pressure (mmHg)	Weight	Waist Measurement	Blood Glucose	Notes (history/examination/ changes to treatment etc)
12/08/09	162/98	75kg	91.4cm	RBG 1:(11.2mmol/l) RBG 2:(11.8mmol/l)	Diabetes diagnosed and explained. Given advice; diet, activity.
6/11/09	128/88	76kg	93cm	RBG: (12.2mmol/l)	Metformin added. Treatment supporter=sister Diet, activity advice given.
23/02/10	136/90	75kg	93.5cm	RBG: (11.0mmol.l)	Attended with sister. Not tolerating side effects (metformin.) Dose reduced-500mg BD.
20/05/10	140/92	78kg	95.5cm	RBG: (12.5mmol/l)	Gliclazide added.
14/8/10	152/102	76kg	95.5cm	RBG: (10mmol/l)	No problems with meds. Feels well. Need to watch BP

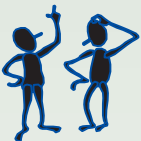
Written Exercises 8



The date is 30/11/10 and you are about to see Hadija in the clinic. It is worth taking a few minutes before you see a patient to remind yourself of their previous treatment, and think about what you need to ask;

1. What symptoms will you check for in the history?
2. What questions will you ask relating to her medication?
3. How can you confirm whether Hadija has been taking her tablets correctly?
4. After the examination, what other information must you obtain during this visit? (You may use the treatment register as a prompt)

Role Play: Part 1 – history and medication review



Now get into your groups of 3. Decide who will play the part of the patient, health worker and observer. If you have not yet played the part of the health worker you should do so now. Read the information for your part. You have 10 minutes for the role play, and 5 minutes for the observer to give feedback.

Information for the health worker

Using what you already know about Hadija's case, and what you have learnt from the last written exercise, take the history and review her medication.

Information for the observer

In this role play you will observe the consultation. After the role play comment on something that was good, and then suggest what could have been done better, i.e. be positive and constructive in your feedback.

See the next page

Information for the patient

You are playing the role of Hadija Abukari, a 45 year old married housewife with 3 grown up children. The health worker will ask you how you have been feeling since you last came to the clinic. Tell them that you have been a little tired but you think it is because you have been busy recently since your eldest daughter had a baby. You have no chest pain/breathlessness or any other specific symptoms. You have been trying to lose weight by cutting down on sugary and fried foods but it is hard when you are so busy.

You have mostly been taking your tablets as instructed (if they ask, you take one metformin tablet twice a day, and two gliclazide tablets in the morning). Every now and then you forget. You know it is important to take them, so when this happens you take double the dose the next day to make up (of both the metformin and the gliclazide). You may show the blister pack to the health worker if they ask to see it. Your treatment supporter is your sister – she is good at reminding you to keep your appointments.

When you have finished the role play and feedback from the observer continue with the next part of the exercise.

Further information: After taking the history you examine Hadija. Her heart and lungs are normal, she has no swelling of her ankles or altered sensation in the feet. You check her blood pressure, weight and waist measurements. You record the results in the treatment register as follows:

Date	Blood Pressure (mmHg)	Weight	Waist Measurement	Blood Glucose	Notes (history/examination /changes to treatment)
30/11/10	142/98	75kg	91.4cm	RBG: (10.6mmol/l)	

Written Exercises 9



Use the information you gained during the role play, and the results in the treatment register from both today, and previous visits (see previous written exercise). Answer the following questions:

1. Is Hadija's blood glucose controlled?
2. Do you need to make any changes to her diabetes medication today?
3. What advice should you give her about missed doses?
4. Look back at her last few visits. Can you make any new diagnoses?
5. What additional treatment and advice will you give Hadija today?
6. What side effects should you warn her about?
7. What follow-up will you arrange for Hadija after this appointment?
8. Now practise filling in the notes section of the treatment register to record this follow-up consultation.

Discuss any points that are unclear with the facilitator before continuing

Role Play Part 2 – Treatment and patient education



Now get into your groups of 3 again. You will continue the role play from the point where you stopped last time. You may change roles or keep playing the same role if you wish.

Information for the health worker

Discuss with the patient the changes you want to make to her treatment, using the answers to the written exercise and the Desk Guide to help you.

Here is a suggestion of how to structure the consultation:

- Give positive feedback first – good news that diabetes is well controlled and congratulate her for the achievement.
- Advise her on what to do if she misses a dose (as above) try to be understanding rather than talk down to and being critical.
- Reinforce the importance of lifestyle changes (diet, physical activity)
- Remind her of the symptoms of hypoglycaemia, and how to treat it
- Explain that she has high blood pressure and why it needs treatment
- Explain the new tablet – dosing, side effects
- Ask if she has any questions, check her understanding
- Finish the consultation and advise her when to make her next appointment

Annual check-ups, Identifying and managing complications

Pamela

Pamela is a 62 year old woman who you have been treating for diabetes for the last year. She is widowed, but lives with her daughter, son-in-law and their four children. She works as a dressmaker. She had her feet, eyes and serum cholesterol checked nearly a year ago when she was diagnosed with diabetes. Today she is attending your clinic for her 3 monthly check-up.

Written Exercises 10



Before reading the further information below, answer the following questions.

Questions

1. How will you establish that it is not a routine follow up but an annual follow up? What system will you have to remind you to check at every visit?
2. Make a list of new symptoms you should ask about
3. What examination findings should you record at an annual check-up?
4. Make a full list of tests that should be done annually, if available.

Further information from the consultation:

During this annual visit, Pamela feels well. She has never smoked and she does not drink alcohol. She spends her day around the house and sometimes catches the bus to the shops. She has tried to cut down sugary foods but uses a lot of salt in her cooking. She is currently taking metformin 1g twice daily and bendrofluazide 2.5mg once daily. She denies any chest pain, breathlessness or stroke symptoms (no limb weakness or slurring of speech). She admits that she sometimes feels pain in the right calf on walking but this goes away when she stops. She feels her eyesight is good and when you check her visual acuity it is 6/6 in both the right and left eyes. You are unable to perform fundoscopy as there is no ophthalmoscope. Likewise, you have no facilities for an ECG or chest X-Ray at the health centre. However, you are able to examine her. Her pulse is regular but a little fast at 102 beats per minute. Her temperature is 38.0°C.

Her heart and lung sounds are normal and she has no ankle swelling. You check her sensation (*with cotton wool*) which is reduced on the soles of both feet, the right more than the left. You can feel all her pulses. There is a small ulcer at the base of the right big toe which is weeping pus.

BP 128/76mmHg, Pulse 102 beats per minute (Regular), Temperature 38.0°C,
Weight 68kg, Waist 82cm, Urine dip - positive for glucose (+) only, RBG:
13.0mmol/L,
Serum creatinine: 103µmol/L

Written Exercises 11



Questions

1. How would you describe Pamela at present; well, unwell, or severely ill?
2. Is her diabetes controlled?
3. Is her blood pressure acceptable?
4. What lifestyle advice should you give her?
5. Is her serum creatinine normal?
6. What complications of diabetes do you think Pamela has developed?
7. How should you manage her new problems?

Practical Exercise



Now that you have all the information from Pamela's annual check-up, record the information on both the 3 monthly and the yearly treatment card.

N.B. Tests that are unavailable you will have to leave blank. You should consider the possibility/practicality of referring patients to have these done at another centre.

Referral for complications and continuing care following hospital discharge (down-referral process)

Musa

Part 1

Musa is a 58 year old who you have been treating for diabetes for three years. At his last visit you suggested that he cuts down on fried foods and walks to work twice a week instead of taking the bus. His blood glucose has been difficult to control. Six months ago you increased his pioglitazone to the maximum dose. You also confirmed that he had high blood pressure and started an antihypertensive drug. He is now taking the following tablets;

1. Metformin, 1g, twice daily (BD)
2. Gliclazide 120mg, once daily (OD)
3. Pioglitazone 45mg, once daily (OD)
4. Aspirin 75mg once daily (OD)
5. Simvastatin 20mg, once daily (OD)
6. Ramipril 1.25mg, once daily (OD)

His RBG on this attendance is 12.1mmol/L. He mentions to you that he has recently been getting breathless on and off when exercising, and he has noticed that his ankles are swollen.

Written Exercises 12



1. What important questions should you ask in the history?
2. What measurements/tests should you take in addition to his RBG?
3. What is the acceptable upper limit for BP in a diabetes patient? How does this differ from the target for a patient without diabetes?
4. Is his diabetes controlled?
5. What is the next step in his diabetes management?
6. What do you think is causing his breathlessness?
7. How should you manage his current problems?

Practical Exercise



Write a brief referral letter to the hospital doctor.

You should include a summary of Musa's previous health problems, what medication he is currently taking, your findings from today's consultation and an explanation of why you need a hospital opinion.

Answer – *Need to produce filled in example of local referral form. Note: Existing form may need to be adapted.*

Musa

Part 2

The next week you receive a letter from the hospital doctor with a summary of Musa's treatment after he was referred. There are instructions for you to continue with his care. Some of his tablets have been changed and he has been started on insulin. Pages 16-17 of the Desk Guide will help you manage patients on insulin. The patient needs to be followed up frequently (weekly at first) and it would be expensive and inconvenient for patients to go back to hospital every time they need a check up. Therefore it is important that you are familiar with insulin and its problems. If blood glucose control is not achieved or you think that the insulin needs to be changed you can refer back to the hospital.

Role play exercise

Now get into groups of 3. One person will play each part as before; the health worker, patient and observer. Read the relevant information below. You will role play the first consultation with Musa at the health centre one week after his discharge from hospital.

Information for the health worker

Read the letter from the hospital below:

Dear health worker,

Thank you for referring Musa to the district hospital. Chest X-Ray confirmed that his breathlessness was due to pulmonary oedema (*fluid in the lungs*) secondary to left ventricular failure (*heart failure*). He improved with oxygen, ACE Inhibitors and diuretics treatment. ECG was performed and showed evidence of old ischaemic change (*previous, probably silent heart attack*). We have made the following changes to his medication:

New Treatment Commenced:

Isophane (Insulatard) 10 units OD (prior to meals)
Atenolol 50mg OD
Frusemide 40mg OD

Discontinued: Pioglitazone

Previous drugs continued:

Metformin, 1g, twice daily (BD)
Gliclazide 120mg, once daily (OD)
Aspirin 75mg once daily (OD)
Simvastatin 20mg, once daily (OD)
Ramipril 10 mg, once daily (OD) (the dose has been increased)

Musa has been supervised in hospital and is now comfortable doing his own insulin injections. He has also learnt to do blood glucose monitoring.

We recommend weekly follow-up with blood glucose monitoring. He does not need to be seen again at the hospital unless you have further concerns.

Yours sincerely,

Dr D. Tato
General physician
District Hospital

Musa has had an RBG test today; the result is 7.9mmol/L. In this consultation you should take a history, explain today's results, ask if Musa has any questions about his treatment and arrange his next follow-up appointment. For all patients on insulin you must check the history of hypoglycaemia. Does Musa know the symptoms of hypoglycaemia and how to treat it if it occurs?

At every visit you should reinforce the need for a healthy lifestyle – you should emphasise to Musa that this is still important even when he is on insulin (you may wish to warn him that he may also put on weight on insulin therapy).

Information for the patient

You are feeling better now since you were treated in hospital. You have not been as breathless walking around the house and your ankles are no longer swollen. You have been passing a lot of urine though and you are worried that your diabetes is getting worse again. Ask the health worker about this. You find it easier to inject in your thigh and so you have been using the same site all the time since you got home. You are worried about what your family and friends would think if they see you injecting so you try to do it in private. You want to know the result of your blood glucose test from today. You are worried that you will have to carry on with the insulin injections for the rest of your life – ask the health worker about this.

Information for the observer

Listen to the consultation and write down some good points, and some things that you think the health worker could improve on. When the role play is finished, give your feedback in a constructive way.

DISCUSS WITH THE FACILITATOR ANY POINTS WHICH ARE UNCLEAR

Managing patients who interrupt treatment

INTRODUCTION

In the previous session steps for follow up appointment were discussed. The role of the treatment supporter was highlighted as well.

SESSION OBJECTIVES

By the end of this session you will be able to:

- Identify patients who have missed treatment
- Act on tracing patients who have not attended or missed appointments
- Highlight the importance of attendance to the patient
- Address the issues for missing treatment
- Educate patients for the need to continue treatment and lifestyle advice
- Realise the role of treatment support worker.

Recognise late attendees – and trace

Read about missed appointments page 31 in the desk guide.

Recognise which patients have missed treatment (and those who have returned. Look at the treatment card or register. The first date is the appointment date, the date below is the date they actually attended - or if is blank, then didn't attend – and need to be traced (contacted).

If the patient hasn't attended Call mobile phone number,
Otherwise contact as feasible, e.g. ask health facility or community health worker to visit, etc

Do not criticise!

If a late attendee, ask patient and relative if still taking their treatment
- if so, continue as for a follow-up appointment, do the RBG and review treatment etc. and discuss the importance of not missing review appointments.

If stopped medications, then do the FBG or RBG depending on availability.

If any of these is very raised RBG >11 mmol/l, FBG >7.0 mmol/l or HBA1C > 7% then review as per a new patient, pages 15-17 of the desk guide i.e., symptoms and signs. Restart at step 2. i.e., diet, exercise and Metformin – follow-up monthly,

increasing drug doses, and adding steps (drugs) as required. Once under control and adherent to drugs and appointments, revert to 3 monthly reviews.

Re-emphasise education on the key points on diabetes (including it is “silent” disease), treatment, need for follow up appointments – for life.

The initial phase is to offer them intensive lifestyle (sensible diet and increased activity) for 3 months. Then the oral agents are introduced as for new patients. Three oral hypoglycaemic drugs (Metformin+ a Sulphonyl urea + pioglitazone) in combination with Acarbose can be taken together. The continuation phase is the same as for new patients and is for life.

Supervision and support

Patient support and supervision reduces the risk of non-compliance by ensuring the patient takes every single dose. It is important to take time to find the most appropriate form of support for the patient, taking into account their own lifestyle, see the section “Supervision and support”. All patients need a treatment supporter and supervision at the follow-up review at the treatment centre. This is to reduce the risk of non compliance by supporting the patient to take the tablets each day for ever.

Salim

Remember Salim, the 57 year old street-seller from Dar. You diagnosed him with diabetes 8 months ago and he struggled to come to terms with the news. He missed his routine 3 monthly appointment last time so you re-arranged it for last week, but he failed to attend again. It is now 6 months since you last saw him.

Written Exercises 13



Questions

1. List 3 ways you could try to contact Salim to encourage him to attend clinic.
2. What information do you need, from both the history and examination, in order to decide how to manage Salim’s diabetes, considering he has missed appointments?

Role Play exercise



Now get into your groups of 3. Using the information gained from the written exercise, you will role play the consultation with Salim. Decide who will play the part of the patient, health worker and observer. Read the information for your part. You have 10 minutes for the role play, and 5 minutes for the observer to give feedback.

Information for the health worker

Obtain a history from Salim. You should try to establish why he has missed appointments without being critical and encourage him to attend in future.

He has some results from today's appointment already to help you, along with his treatment so far, recorded in the register:

Salim DOB 21/07/1951

Date	Blood Pressure (mmHg)	Weight	Waist Measurement	Blood Glucose	Notes (history/examination/ changes to treatment etc)
12/10/09	126/72	73kg	91.4cm	RBG 1: 12.2mmol/l RBG 2: 11.8mmol/l	Diabetes diagnosed and explained. Given advice; diet, smoking, activity.
06/01/10	144/92	76kg	93cm	RBG: 11.3mmol/l	Metformin added. Treatment supporter=brother Stop smoking advice given.
22/04/10					Missed appointment
13/05/10					Missed appointment
01/06/10 (Today)	132/78	76kg	92.5cm	RBG: 11.8mmol/l	

Take a few minutes to think about the following before you begin the consultation:

Is his diabetes controlled?

Is he taking the prescribed medication?

Why did he miss 2 appointments?

What changes could you make to his treatment to enable him to manage it better?

What lifestyle changes should you suggest? (weight, smoking, physical activity)

Does he understand the long-term consequences of poorly controlled diabetes?

How can you motivate him to continue with life-long treatment?

Finally, make sure that you have the correct contact details for Salim.

Information for the observer

Listen to the consultation and write down some good points, and some things that you think the health worker could improve on. When the role play is finished, give your feedback in a constructive way.

Information for the patient: You are playing the part of Salim:

- You missed the first appointment because you forgot. You still live in the same house.
- You are worried what the health worker will say because you haven't been taking your tablets – only admit this if they ask you directly. You stopped the metformin after a few weeks because it was giving you diarrhoea. You felt ok without it for a while but you have recently started to feel tired and thirsty again
- Some of your friends think that you can catch diabetes and you are worried if they find out that you have diabetes they will stop spending time with you.
- You walk the streets to sell your goods every day, but you still smoke. You have tried to eat more healthily since you were diagnosed with diabetes by eating fruit instead of fried foods for snacks.
- You know that diabetes is supposed to cause heart disease but you feel fine. You know that diabetes is for life so if you are going to develop heart disease in future there is nothing you can do about it now.

Once you have finished the role play and the observer has given feedback read the notes below which gives a suggested approach to the consultation.

Suggested approach

Patient education/motivation

Be non-judgmental in your approach. Do not criticize Salim for not taking his tablets. Explain that diabetes is not infectious. Salim is aware that diabetes can lead to heart disease, but you should explain to him that it can also cause stroke, poor eyesight, kidney disease and ulcers. He needs to understand that there can be damage caused by diabetes without any symptoms – and only later will he start to feel unwell - 'the silent killer'. He does not realise that he can significantly reduce the risks by keeping his blood sugar levels below 11.1mmol/L. This should be emphasised to him. The health worker should encourage him to achieve this by taking his chosen treatment regularly and attending for appointments. Ask about his lifestyle. Encourage him to stop smoking and increase his activity. Behaviour changes are more likely to be achieved if you help the patient a goal that they think is realistic, and only focus on one goal at a time.

Changes to treatment

There are a number of ways of managing this consultation. Salim's diabetes is not well controlled. He is no longer taking the metformin because of the diarrhoea side effects. The healthworker could encourage him to try the metformin again at a lower dose, explaining that the diarrhoea may settle down after a few weeks. If available, a sustained release preparation might cause fewer side effects. Alternatively, they could stop metformin and try an alternative such as glibenclamide, ensuring the patient is aware of the risk of low blood sugar. The best approach might be to give the options to the patient and let him decide. When a patient has defaulted it is even more important to listen to their concerns, and involve them in decisions about their treatment. If the treatment choice takes into account the patient's preferences and fits in with their lifestyle it is more likely to be sustainable for them.

Follow-up

Salim is due his next appointment in 3 months time. You should arrange for him to have his annual check then as it will be 11 months since his diagnosis. You should explain to Salim that once a year he will have extra tests to check for any of the complications of diabetes that were mentioned earlier. Note that he has had two high blood pressure readings. You should recheck it at the next appointment and if high consider starting antihypertensive medication.

KEY POINTS

- Patients who have missed appointments and or missed treatment need chasing up.
- They can be contacted by support worker, community worker or a volunteer.
- The approach should be gentle and encouraging.
- There should be no criticism at all and you need to be a good listener.
- They should be educated again.
- The management will be same as for a new patient with diabetes.
- They should be put back in the system for a regular follow up.

Other management issues

Management of Severely ill patients

Severely ill patients should be referred to hospital as soon as possible. Read pages pg 30-33 of the desk guide for guidance on their identification and initial care.

Management Flow charts

The flow charts should be placed on either the table or wall for easy reference by the health worker.

Patient Education Leaflet

A copy of the patient education leaflet should be given to each patient who should be encouraged to read it over and over and share it with their family.

DEFINITIONS

Albuminuria/ proteinuria: It is leakage of a particular substance called protein in the urine from the kidney. Normally the kidney does not filter this substance or in very low quantities in the urine.

Blood glucose: The amount of glucose in the blood. Sugar in blood (Glucose) is obtained from the food we eat, sweet foods, bread or potatoes.

BMI: body mass index calculated as weight in kg/ height in meters square.

Diabetes: It is a common condition in which the amount of glucose (sugar) in the blood is too high because body is unable to use it properly. The body cannot convert glucose into energy as it should be (type 1 is lack of insulin, type 2 is lack of insulin and low response to insulin).

Gestational diabetes: when the glucose in blood is high first time or recognized when a lady gets pregnant.

Glycosuria: When there is sugar (glucose) in the urine

Hypertension: It is high blood pressure

Hypoglycaemia: low blood glucose level <4mmol/l.

Insulin: It is a hormone made by pancreas which lies behind the stomach. Insulin controls the amount of sugar (glucose) in the blood by helping glucose to enter the cells where it is used as a fuel by the body.

Ketonuria: The presence of ketones in the urine. Ketones are dangerous chemicals which are produced when blood glucose levels are high.

Myocardial infarction: It is a condition when the muscles of the heart get devoid of oxygen due to reduced or lack of blood supply and part of them dies.

Nephropathy: Damage to or disease of the kidney characterized by proteinuria.

Neuropathy: When a person gets tingling, numbness, electric shock like feeling and weakness of part supplied by the affected nerve.

OGTT: oral glucose tolerance test, when blood glucose is tested after fasting for 8-14 hours and two hours after giving 75g anhydrous glucose in 250ml water

Oral drugs: Tablets which can be taken by mouth.

Peripheral vascular disease: It is narrowing of the arteries of the lower legs and can result in feeling cold and weak in foot.

Prediabetes: When blood glucose levels are not normal and not completely diagnostic of type 2 diabetes. It includes impaired fasting glucose and impaired glucose tolerance.

Primary care centre: The dispensary, health centre or other health unit providing first point of contact care (including un-referred patients attending district hospital OPD).

Retinopathy: The changes that happen in the back screen of the eye (retina). There can be bleeds, or deposits of lipid, or loss of oxygen to the screen and can lead to loss of vision.

Stroke: It is a brain attack whereby part of the brain gets less oxygen than it needs and can lead to loss of vision, speech, weakness of one side of the face, arms (upper limbs) and legs (lower limbs).

Type 1 diabetes: It is diagnosed there is severe lack of insulin in the body because cells in the pancreas have been destroyed. It develops quickly over a few weeks. It is only treated by insulin and diet. Patients tend to be younger and thinner.

Type 2 diabetes: It is diagnosed when body can still produce some insulin though not enough and it does not work properly. It can be treated by diet alone, tablets or insulin. Patients tend to be older and overweight.

Diagnosis of diabetes (WHO)

Symptoms	No Symptoms
+ 1 high RBG** OR	+ 2 high RBG** OR
+ 1 high FBG*	+ 2 high FBG* OR 1 high RBG + 1 high FBG

****RBG >200mg/dL, (11.1mmol/l)**

***FBG >126mg/dL, (7.0mmol/l)**

In between values- Prediabetes

Impaired Fasting Glucose	Impaired glucose tolerance
110-126 mg/dL (6.1-6.9 mmol/l)	140-200mg/dL (7.9 -11.1 mmol/l)

Action

These patients should be followed up every year after being informed about diet and increased activities

INSULINS

Type	Appearance	Patterns of use
Short acting Soluble Aspart lispro	clear	with meals 2-3 times/day
Medium acting Isophane Semilente Lente	cloudy	twice (once) daily
Long acting Ultralente Protamine zinc	cloudy	once (twice) daily
Pre mixed Mixtard 30 (70:30) Mixtard 50 (50:50)	cloudy	twice (once daily)
Analogues (long acting) Glargine Detemir	clear	once (twice daily)

Prescribing Insulin

- A Special Identification card is recommended
- Self monitoring is essential
- Regular follow up is important

Insulin can be prescribed as

- **once** daily -long acting
- **twice** daily – intermediate acting or premixed
- **three** times daily – short acting or
- *as a basal bolus regime (4-5 injections per day) one long acting and 4 short acting, depending on insulin preparation and the needs of the patient (patient should be willing to test blood glucose at home every day, HBGM) not possible in District Clinic settings)*

Insulin type and dosage

1. with long acting once a day if early morning blood glucose are high >9 mmol/l (160mg) with 0.5 units/kg, gradually increasing weekly till HBA1C <7% or blood glucose are between 5.1-7.5 (91-120mg) fasting and 7.6-9 mmol/l (136-160mg) after meals
2. short acting insulin three times with meals if blood glucose after meals are > 15mmol/l
3. twice daily insulin regimen if daily routine is same
4. The 'correct' dose of insulin is that which achieves the best attainable blood glucose control for an individual

ANSWERS TO WRITTEN EXERCISES

Answers to Written Exercises 1 (Page 9 of the case management Training Modules)

Question 1 – (A) open question	Question 4 – (C) leading question
Question 2 – (C) leading question	Question 5 – (A) open question
Question 3 – (A) open question	Question 6 – (B) closed question

Answers to Written Exercises 2 (Page 27 of the case management Training Modules)

1. No – Hadija does not have symptoms or signs suggesting a diabetes emergency (see the Desk Guide page 9) or other severe illness therefore does not require transfer to hospital.
2. Her symptoms which should make you think of diabetes include: recurrent infections (thrush), drinking more than usual (polydipsia) and passing urine more frequently (polyuria). She is overweight (waist measurement > 88cm/34”) and also has a family history of diabetes.
3. You need to arrange blood glucose testing possible two times for this patient (see the Desk Guide page 9, and the next section of the module).
4. We already have some evidence that this patient has high blood pressure (3 further measurements needed to confirm) and obesity. She also has a family history of cardiovascular disease. She is at risk of heart disease and raised blood lipids. You should ask her about chest pain and check her lipids if the test is available.

Answers to Case Studies on Diagnosing NCD and Diabetes

(Pages 31-32 of the module)

1. Mrs M: This is most typical of asthma. Asthma symptoms may be triggered by dust, pollen or in this case, viral infections (a cold virus). Is likely to be asthma due to the past history of a “tight” (wheezy) chest and cough at night (variation between day and night). But as well it could be TB because of the cough for 3 weeks; so we must also screen 3 sputum samples and perhaps, if these are negative, a chest X-ray/ medical opinion to exclude TB. This is unlikely to be COPD because the person is young with no history of smoking or sputum production and symptoms are periodic with normal healthy periods in between. Can do peak flow measurements to check reversibility.

2. Mr N: This could be an **acute** or **chronic** communicable illness or **chronic non communicable illness**. Check for TB – 3 x sputum smears (and if available and required a chest X-ray) which may show pneumonia, particularly pneumocystis pneumonia (PCP). The white plaques suggest oral thrush, and difficulty swallowing indicates candidiasis affecting the oesophagus. There are two infections at the same time, one bacterial and other fungal in a smoker. This is an AIDS defining illness. Suspect HIV – counsel and test. Refer to Std Treatment Guidelines Tanzania (Viral illnesses/ HIV p151), or the “Integrated Management of Adolescent-adult Illness (IMAI) acute care and chronic HIV-ART guidelines, for management. This could also be carcinoma of lung which might show on chest x ray.

3. Mr O: This patient is severely unwell with pneumonia. He needs to be given a first dose of an IM an antibiotic and oxygen (if available) and discuss with the family how best to urgently transfer (with a referral letter) to hospital.

4. Mr P: Treat as pneumonia. This patient is not severely ill and can be treated in the community but you should arrange to review him in 1-2 weeks to check he is improving. However, always consider a possible underlying cause. He is elderly, overweight, heavy smoker with history of repeated chest infections in previous 2 years reaching the criteria for diagnosis of COPD. Note he also has swollen ankles, which indicates that he may also have a degree of heart failure secondary to his COPD. Can do peak flow measurements. You should enter his name on the disease register, start COPD management, life style advice, and offer regular follow-up. If no improvement you may need to organise chest X ray and refer to a hospital doctor.

5. Mr R: This patient has angina, and possibly high blood pressure. The pain only starts on exercise and does not last more than 15 minutes; therefore it is unlikely to be a heart attack. You should advise him about diet, physical activity and motivate him to stop smoking. Arrange to check his fasting blood glucose and cholesterol if available. Check his BP again on two more occasions, if still over 150/90, start him on an anti-hypertensive. Statin and aspirin can be commenced depending on results of blood test and if there were no contraindications and make a routine referral to the hospital. He should be entered onto the disease register and offered regular follow-up.

6. Mrs Q: She is ex-smoker, tired, weak and has lost weight. Check for TB and counsel and test for HIV. You may wish to treat her with antibiotics for pneumonia whilst waiting for the results. TB is the most likely diagnosis. If tests are negative for both, consider the possibility of diabetes. Ask about thirst, polyuria etc. Do a fasting blood glucose test. Check out for Cancer of lung because she is ex- smoker, tired and has lost weight.

7. Mrs S: This patient has the symptoms of a urine infection. You should check a urine dipstick for signs of infection and glucose. Even if you confirm and treat her for a urine infection, you must also test for diabetes. Consider also counselling and testing for HIV. You should ask her about cardiovascular risk factors. Take the opportunity to check her blood pressure and weight or waist measurements.

Notes

All patients should have brief counselling and testing for HIV (unless they opt-out). If negative in people with recurrent infections etc., also do a glucose test to exclude diabetes. Do the BP in any middle aged or over weight person.

In any person with cough > 2 weeks, even if you diagnose and treat for another cause, also do 3 sputum smears to exclude TB.

*For **acute** conditions, refer to Standard Treatment Guidelines Tanzania, and/or the "Integrated Management of Adolescent-adult Illness (IMAI) acute care and chronic HIV-ART or other clinical guidelines, for acute illness management.*

Answers to Written Exercises 4 (Page 36 of the Training Module)

1. No.
2. You must arrange a second blood glucose test to confirm.
3. Random blood glucose as this can be done at any time on another day.
4. Yes because she has high readings on two separate occasions.
5. Yes because she is not severely ill or has any complications.

Answers to Written Exercises 5 (Page 37 of the Training Module)

1. This patient has prediabetes (see page 8 of the Desk Guide)
2. This is a stage before diabetes and he is likely to get diabetes and cardiovascular disease in the future
3. If at this stage he eats a healthy diet, increases his physical activity, stops smoking it will prevent him developing full blown diabetes or getting any heart disease. Yes all patients with pre-diabetes can be managed in the primary care centre
4. He should have a yearly (or six monthly if also other CVD problems) follow up appointment for blood glucose.

Answers to Written Exercises 6 (Page 41 of the Training Module)

1. b. is correct – see page 9 of the Desk Guide.
2. The next stage is drug treatment. However, it is still very important to reinforce the lifestyle advice you gave him one year ago. You should praise him for his weight loss, and try to encourage him to give up smoking.

3. Metformin would be a suitable, first line drug (especially if not thin). NB. Is unsuitable in pregnancy and severely ill patients (e.g. advanced renal disease). Ideally, you should do a blood test to check the patient's urea and electrolytes before commencing Metformin. However, this facility may not be available.
4. Advise Peter to start with one tablet (500mg) once a day for the first week. If he tolerates this he should increase the dose for the second week to one tablet twice a day, up to three times per day by the third week.
5. You should make him aware that Metformin might make him feel sick, bloated and/or he may experience diarrhoea. However, these symptoms settle with time. If he can't cope with the side effects with dose increase he can go back to the previous dose.
6. Peter should have a follow-up appointment 3 months from now.

Answers to Written Exercises 8 (Page 79 of the Training Module)

1. See page 19 of the Desk Guide.
 - a) Ask about any new symptoms (open question)
 - b) Ask specifically about diabetes symptoms (polyuria, polydipsia)
 - c) Ask specifically about symptoms related to associated conditions (e.g. headache, chest pain, breathlessness, pain in the legs on walking, pins and needles in the feet, vision problems, impotence in men)
 - d) If female, check that they are not pregnant (contraception history (if so refer)
 - e) Ask about lifestyle – have they made any changes to diet/activity since the last visit?
2. A full medication review should include the following:
 - a) Is the patient taking the medication? (if not, do not criticise or be judgemental – try to find out why)
 - b) Have they experienced any side effects? Ask about important side effects according to which medication they are taking. E.g. Hadija is on Metformin, which can cause nausea and diarrhoea. She is also taking a sulphonylurea (Gliclazide) so it is important to check for symptoms of hypoglycaemia.
3. There are 3 main ways of checking that the patient is taking her medication correctly:
 - a) Ask the patient to tell you the dose and frequency and check that their understanding is correct
 - b) Check the blister pack if they have brought it with them – count out how many tablets should have been taken since the last visit
 - c) If available, ask the treatment supporter
4. You should record the '3 monthly essential tests' which include
 - a) Random blood glucose (or FBG / HbA1C if available)
 - b) Blood Pressure
 - c) Weight and waist measurement
 - d) Urine dipstick test if available

Answers to Written Exercises 9 (Page 81 of the Training Modules)

1. Yes. The latest RBG is less than 200mg/dl (11.1mmol/l)
2. No. You do not need to make further changes to Hadija's diabetes medication today.
3. Advise her against taking double dose if she has forgotten to take her tablets the day before. This is risky because she is more likely to have a hypoglycaemic episode, and other side effects especially with gliclazide. You should explain this to her, and remind her of the symptoms and dangers of hypoglycaemia. (Page 16 of the Desk Guide) She should try not to miss a dose, however if she does not to make up but take usual dose the next day. It is a concern if she misses her tablets for long periods of time.
4. Yes. Hadija's last 3 BP readings have been high. You should aim a BP<130/80 in patients with diabetes. You can now make a diagnosis of high blood pressure (hypertension). Note her weight has also been gradually increasing.
5. Remember to reinforce the lifestyle advice – e.g. weight loss and physical activity. This will help her diabetes and also her high blood pressure. You need to commence antihypertensive medication. You may choose a drug according to local availability. Start with the lowest dose, taken at bedtime and gradually increase as tolerated. E.g. lisinopril 2.5mg. Make sure that female patients are using contraception so that they do not get pregnant on lisinopril.
6. Warn them about the side effects, e.g. low blood pressure with change in posture (dizziness, collapse). NB Patients often do not feel unwell with high blood pressure and therefore do not understand why they need to take the medication. You must explain that if not controlled, high blood pressure can cause heart attacks and stroke in the future.
7. Arrange for follow-up in another 3 months, but encourage Hadija to return sooner if she develops any symptoms after taking the new medication.

Answers to Written Exercises 10 (Page 82 of the Training Modules)

Questions

1. How will you establish that it is not a routine follow up but an annual follow up? What system will you have to remind you to check at every visit?

Annual follow up is yearly after the first visit.

The diabetes register records all appointments.

2. Make a list of new symptoms you should ask about

Any symptoms volunteered by the patient

Symptoms of uncontrolled diabetes

Side effects of medication

Symptoms of complications of diabetes

Symptoms of other CVDs, cancer, COPD

3. What examination findings should you record at an annual check-up?

Eyes

Feet

Heart examination

Lung examination

4. Make a full list of tests that should be done annually, if available.

CXR –if symptoms and signs of heart or lungs

ECG/ECHO- if symptoms and signs of heart disease or failure

Lipids (Cholesterol & Triglycerides) (routine)

Creatinine (routine)

Answers to Written Exercises 11 (Page 83 of the Training Modules)

1. Pamela is unwell. She has a fever and her pulse is fast, suggesting she has an infection. Her blood pressure is stable at present but without immediate treatment she could become severely ill.
2. No. Her RBG is >13.0mmol/L, therefore it is uncontrolled.
3. Yes. Her BP is below the upper limit for diabetes, which is 130/80mmHg.
4. You should reinforce the importance of a healthy lifestyle to patients with diabetes at every visit. First praise Pamela for not smoking and cutting down sugary foods. Then you could suggest she sometimes walks to town instead of taking the bus, or ask her to consider not adding salt to her cooking.
5. Yes. Her creatinine is <160µmol/L so she is unlikely to have kidney disease caused by her diabetes or her medication.
6. She has developed 'peripheral neuropathy'. This is damage to the nerves supplying the feet caused by diabetes which means that her sensation is reduced. She may have injured her foot without realising. Now she has an ulcer. She may also have vascular disease affecting her right leg. It will heal slowly because of poor blood flow and an increased tendency to infection.
7. You should refer her to a hospital doctor - the appropriate specialist would be a surgeon. You must decide whether she can be seen in a routine clinic or whether she needs urgent transfer to hospital. Pamela should be transferred urgently (i.e. same day) because she has an ulcer which is infected (pus) and her pulse is high suggesting that she is becoming severely ill.

Answers to Written Exercises 12 (Page 84 of the Training Modules)

1. Ask if he has managed to make the lifestyle changes you suggested. Ask whether he is taking his tablets regularly – get him to tell you the doses and times of each. Ask if he has experienced any new symptoms. (e.g. diabetes symptoms, drug side effects (unlikely if no recent increase in dose/changes in medication but still possible, see the Desk Guide for individual drugs) symptoms relating to complications. He has already mentioned that he is breathless on exertion and has ankle swelling. Is he a smoker? Does he have a cough/sputum/fever? Has he been having any chest pain or palpitations? Has his vision changed? You should try to ask about all the symptoms on p19 of the Desk Guide, including sexual impotence in men.
2. You must check his BP, weight, waist measurement, urine dipstick if possible. The upper limit for blood pressure in diabetes is 130mmHg systolic, or 80 mmHg diastolic. You may allow higher readings for patients without diabetes; up to 160mmHg systolic and 100mmHg diastolic before starting drugs but you should still always advise lifestyle changes.
3. No. His RBG remains high despite treatment with three hypoglycaemic drugs.

4. First you must make sure that he is taking all the prescribed medication. Musa is now on the maximum treatment for diabetes with tablets and as his blood glucose remains uncontrolled the next step is to start insulin therapy. Usually this is done by a hospital physician, and he therefore needs referral. While waiting for hospital appointment *if available* he can be trained in the *community* to monitor his blood glucose at home.
5. It would be helpful to establish what is causing his breathlessness. The most likely causes are heart disease/ heart failure, or a chest infection. The associated ankle swelling suggests it might be heart failure with a build up of fluid in the tissues. If he had breathlessness with fever and cough you should suspect pneumonia or TB. Always consider the possibility of underlying HIV. A full history and examination is important here. Check for signs of severe illness.
6. Heart failure, see above.
7. Musa needs to be referred to a hospital physician. You must decide whether he can be seen in a routine clinic, or whether he needs immediate transfer to hospital. This will depend on your examination findings, and how unwell he appears. Note that he may need to commence insulin soon and this can also be considered by the hospital.

Answers to Written Exercises 13 (Page 88 of the Training Modules)

1.
 - A) Phone his mobile number. B) Visit (or send someone to visit) his home address. C) Contact his treatment supporter on their mobile phone. (Contact numbers and address should be recorded on the treatment card/register.)
2.
 - Find out why he didn't attend. Was it because of money? Has he moved? Did he forget? Was he worried about something?
 - Has he been taking his tablets? This is important to know whether to carry on with the previous treatment or to start from the beginning again. If not, why? Did he have side effects? Would he rather try an alternative tablet?
 - Does he understand what diabetes is, and the risk of developing related medical problems in the future?
 - You also need to know his BP, weight, waist measurement and blood glucose results.

MAZOEZI YA VIKUNDI KUHUSU MTINDO BORA WA MAISHA

MAJIBU YA KAZI ZA KIKUNDI

ZOEZI LA KWANZA: JINSI YA KUPANGA MLO KAMILI KWA KUTUMIA MAKUNDI YA VYAKULA

Washiriki wachague angalau chakula kimoja kutoka kwenye makundi yafuatayo:

- Vyakula vya nafaka, mizizi na ndizi:**
Vyakula katika kundi hili ni pamoja na mahindi, mchele, mtama, ulezi, ngano, uwele, viazi vikuu, viazi vitamu, muhogo, magimbi, viazi mviringo na ndizi.
- Vyakula vya jamii ya kunde:**
Vyakula vya jamii ya kunde ni pamoja na maharagwe, njegere, kunde, karanga, soya, njugu mawe, dengu, njegere kavu, choroko na fiwi.
- Vyakula vyenye asili ya wanyama:**
Vyakula vyenye asili ya wanyama ni pamoja na nyama, samaki, dagaa, maziwa, mayai, jibini, maini, figo, senene, nzige, kumbikumbi na wadudu wengine wanaoliwa.
- Mboga-mboga:**
Kundi hili linajumuisha aina zote za mboga-mboga zinazolimwa na zinazoota zenyewe. Mboga-mboga ni pamoja na mchicha, majani ya maboga, kisamvu, majani ya kunde, matembele, spinachi, mnafu, mchungu. Aina nyingine za mboga-mboga ni pamoja na nyanya, karoti, pilipili hoho, biringanya, matango, maboga, nyanya chungu, bamia, bitiruti, kabichi na figiri.
- Matunda:**
Kundi hili linajumuisha matunda ya aina zote kama papai, embe, pera, limau, pesheni, nanasi, peasi, chungwa, chenza, zambarau, parachichi, ndizi mbivu, fenesi, stafeli, mabungo, madalansi, pichesi na topetope. Aidha ikumbukwe kuwa matunda pori au yale ya asili yana ubora sawa na matunda mengine. Matunda hayo ni kama ubuyu, ukwaju, embe ng'ongo, zambarau na zaituni.
- Mafuta:**
Mafuta yanayotokana na mimea ni kama mbegu za alizeti, ufuta, pamba, korosho, karanga, nazi na mawese. Mafuta pia yanaweza kupatikana kutoka kwa wanyama, kwa mfano: siagi, samli, nyama iliyonona na baadhi ya samaki.
- Sukari:**
Sukari hupatikana kwenye sukari ya mezani, miwa na asali.

ZOEZI LA PILI: MTINDO BORA WA MAISHA

1. Kuhusu Juna:

Mambo ya kujadili:

- Juma ana kiribatumbo (obesity)*
- Anatumia lifti, anumia gari muda wote; huangalia luninga au kutumia kompyuta muda wa mapumziko*
- Ana kazi nyingi-Msongo wa mawazo*
- Hula vyakula vyenye mafuta mengi (chapati, maandazi, chipsi, samaki wa kukaanga)*
- Hula vyakula vyenye sukari nyingi (soda 1 kila siku)*
- Hanywi pombe*
- Havuti sigara.*

Juma yupo katika hatari ya kupata ugonjwa wa kisukari, ugonjwa wa moyo, na shinikizo kubwa la damu na hata baadhi ya saratani. Hii inachangiwa na mtindo wake wake wa maisha unaohusisha kuwa na uzito mkubwa sana, kutokufanya mazoezi, tabia yake ya ulaji na msongo wa mawazo.

Ushauri:

- Juma apongezwe kwa sababu hanywi pombe wala kuvuta sigara.***
- Juma ashauriwe kufanya mazoezi*** ya mwili angalau kwa dakika 30 kila siku kama kutembea kwa haraka. Aanze kwa kutembea muda mfupi, na baadaye anaweza kuongeza muda hadi dakika 60 kwa siku na akishindwa kabisa kufanya kila siku angalau dakika 60 mara tatu kwa wiki. Azingatie yafuatayo:
 - Badala ya kutumia gari wakati wote, apange shughuli ambazo atafanya kwa kutembea kwa miguu;*
 - Apande ngazi kwenda ghorofani badala ya kutumia lifti;*
 - Apunguze muda wa kutazama televisheni na kutumia kompyuta na badala yake afanye shughuli zinazotumia viungo vya mwili kama kufua, na kazi za bustani, kufyeka majani nk;*
- Juma ashauriwe kuhusu ulaji wake:***
 - Apunguze ulaji wa vyakula vyenye mafuta mengi- achague vilivyochemshwa au vilivyochomwa badala ya vilivyokaangwa*
 - Ale matunda katika kila mlo*
 - Ale mbogamboga kwa wingi katika kila mlo*
 - Anywe maji safi na salama au juisi halisi ya matunda isiyo na sukari nyingi, badala ya coca cola*
 - Ale vyakula vyenye makapi-mlo kwa wingi, apunguze chumvi na apunguze kiasi cha chakula anachokula, hususan vile vyenye nishati-lishe kwa wingi.*
- Juma ashauriwe kupunguza msongo wa mawazo kwa:***
 - kufanya mazoezi,*
 - kujipa muda wa kupumzika,*
 - kushiriki katika shughuli mbalimbali kama michezo, matamasha, harusi;*
 - na pia kupangilia vizuri jinsi ya kutumia muda wake wa kazi za ofisi ili atoke mapema ofisini na asiende kila mwisho wa wiki.*

2. *Kuhusu Joyce:*

Mambo ya kujadili:

- BMI ya Joyce ni 33 (ana kiriba-tumbo)
- Hafanyi mazoezi ya mwili kwani hukaa kwenye kompyuta kwa muda mrefu, huchukuliwa na gari la ofisi, huangalia luninga kwa muda mrefu, husoma kitabu na kulala.
- Hutumia sukari na mafuta mengi (chai, maziwa, soda na vyakula vilivyokaangwa)
- Anakunywa pombe chupa 2 mara tatu tu kwa wiki.
- Mume wake anavuta sigara na huvuta hata akiwa chumbani.
- Joyce yupo katika hatari ya kupata magonjwa sugu yasiyo ya kuambukiza kama ugonjwa wa kisukari, ugonjwa wa moyo, na shinikizo kubwa la damu na hata baadhi ya saratani. Hii inachangiwa na kuwa na uzito mkubwa wa mwili, kutokufanya mazoezi, tabia yake ya ulaji, unywaji wa pombe na uvutaji sigara wa mumewe.

Ushauri:

- Joyce ashauriwe kufanya mazoezi* ya mwili angalau kwa dakika 30 kila siku kama kutembea kwa haraka. Aanze kwa kutembea muda mfupi, na baadaye anaweza kuongeza muda hadi dakika 60 kwa siku na akishindwa kabisa kufanya kila siku angalau dakika 60 mara tatu kwa wiki. Azingatie yafuatayo:
 - Badala ya kutumia gari wakati wote, apange shughuli ambazo atafanya kwa kutembea kwa miguu;
 - Apunguze muda wa kutazama televisheni, kusoma vitabu na kulala. na badala yake afanye shughuli zinazotumia viungo vya mwili kama kufua, kuosha vyombo, kusafisha nyumba, kazi za bustani nk;
- Joyce ashauriwe kuhusu ulaji wake:*
 - Apunguze ulaji wa vyakula vyenye mafuta mengi- achague vilivyochemshwa au vilivyochemwa badala ya vilivyokaangwa*
 - Ale matunda katika kila mlo*
 - Ale mbogamboga kwa wingi katika kila mlo*
 - Anywe maji safi na salama au juisi halisi ya matunda isiyo na sukari nyingi, badala ya Fanta*
 - Ale vyakula vyenye makapi-mlo kwa wingi, apunguze kiasi cha sukari na chumvi, pia apunguze kiasi cha chakula anachokula, hususan vile vyenye nishati-lishe kwa wingi.*
 - Apunguze idadi ya bia na ikiwezekana aache.*
- Mume wa Joyce ashauriwe kuacha kuvuta sigara na aache kuvutia ndani ya nyumba*

3. Kuhusu Aloyce:

Mambo ya kujadili:

- BMI ya Aloyce ni 23 (hali nzuri ya lishe)
- Aloyce hafanyi mazoezi ya kutosha (hutumia lifti kila siku, huchukuliwa na gari kwenda kazini na kurudishwa kila siku.
- Anavuta sigara
- Kila siku lazima apate bia 3.
- Hula nyama choma mara nyingi na lazima ale tena nyumbani
- Asubuhi hula supu ya kuku na chapati 2
- Hali mchana
- Aloyce ana hali nzuri ya lishe na umri wake ni mdogo. Mtindo wake wa maisha unamuweka katika hatari ya kupata magonjwa sugu yasiyo ya kuambukiza kadiri umri wake unapongezeka. Tahadhari ni bora kuliko kutibu.

Ushauri:

- Aloyce apongezwe kwa kwenda muziki kwani humsaidia kupata mazoezi na kupunguza msongo; hata hivyo apewe tahadhari kuhusu mambo hatarishi yanayoweza kutokea kwenye muziki (ulevi, ugomvi na ngono isiyo salama). Pia apongezwe kwa kupendelea sana kufanya mazoezi ya kukimbia kila anapopata nafasi, ila afanye kila siku
- Aloyce anajitahidi kula mlo kamili jioni cha jioni ila ahakikishe upatikanaji wa tunda kila mlo
- Aloyce ashauriwe kufanya mazoezi* ya mwili angalau kwa dakika 30 kila siku Pia azingatie yafuatayo:
 - Badala ya kutumia gari wakati wote atembea kwa miguu;
 - Apande ngazi kwenda ghorofani badala ya kutumia lifti;
- Aloyce ashauriwe kuhusu ulaji wake:*
 - Ale mlo kamili mara tatu kwa siku.
 - Apunguze ulaji wa nyama baa
 - Apunguze unywaji wa pombe
 - Ale matunda katika kila mlo
 - Ale mbogamboga kwa wingi katika kila mlo
 - Anywe maji safi na salama
 - Ale vyakula vyenye makapi-mlo kwa wingi
 - Atumie sukari, chumvi na mafuta kidogo.
 - Aache kuvuta *sigara*

Ikumbukwe: hata unapokuwa na uzito mzuri ni muhimu kufuata vipengele vingine vya mtindo bora wa maisha, hususan katika umri mdogo.

4. Kuhusu Elizabeth:

Mambo ya kujadili:

- Elizabeth ana uzito uliozidi (BMI = 28.5)
- Anafanya kazi zote za nyumbani
- Hanywi pombe
- Anapenda sana soda (anaweza kunywa hata 3 kwa siku).
- Ulaji wake: vyakula vilivyokaangwa, hali matunda, hula mboga za majani kwa kiasi kidogo
- Muda wake wa kupumzika hupenda kuangalia luninga, hujipumzikia kwa kulala.
- Elizabeth ana uzito wa mwili uliozidi amabo ni kiashiria hatarishi cha magonjwa sugu yasiyo ya kuambukiza hasa umri wake unapongezeka.
- Ushauri:**
- Elizabeth asifiwe kwa kujishughulisha nyumbani na kutokunywa pombe, pamoja na kutumia vitafunwa vilivyochemshwa.
- Elizabeth ashauriwe kuhusu ulaji wake:
 - Abadilishe njia ya kupika- achemshe badala ya kukaanga.
 - Ale matunda katika kila mlo
 - Aongeze ulaji wa mbogamboga katika kila mlo
 - Anywe maji safi na salama au juisi halisi ya matunda isiyo na sukari nyingi, badala ya soda
 - Ashauriwe kuhusu kiasi cha chakula anachokula na asusa anazotumia, hususan vile vyenye nishati-lishe kwa wingi.
 - Ale vyakula vyenye makapi-mlo kwa wingi, apunguze kiasi cha sukari na chumvi.
- Elizabeth ashauriwe kuongeza kiasi cha mazoezi angalau kwa dakika 30 kila siku kwa kutembea. Aanze kwa kutembea muda mfupi, na baadaye anaweza kuongeza muda hadi dakika 60 kwa siku na akishindwa kabisa kufanya kila siku angalau dakika 60 mara tatu kwa wiki. Badala ya kutumia gari kwa safari fupi atembea kwa miguu;
- Apunguze muda wa kutazama televisheni

ZOEZI LA TATU: UNASIHI WA CHAKULA NA LISHE KWA WATU WENYE MAGONJWA SUGU YASIYOAMBUKIZA

1. Mtu mwenye kisukari aina ya pili (type II diabetes)

Vipengele vya majadiliano:

	Paulina Mroso	Mashauri Makangara
Umri (miaka)	40	52
BMI	35 (Kiribatumbo/obese)	17 (hali duni ya lishe)
Mazoezi	Hafanyi	Kulima na kutembea
Tabia ya Ulaji	Vyakula vyenye mafuta mengi Anakula nyama ya ngombe kila siku Anakunywa soda Hawali matunda Hawali mboga mboga za kutosha Asusa zisizo bora kilishe Anakunywa pombe	Hupati kifungua kinywa Hutumia unga uliokobolewa Hatumii matunda Anakunywa pombe za kienyeji Huvuta sigara
Kipato	Kizuri	Duni

Ushauri wa chakula unapotolewa kwa mgojwa wa kisukari ni muhimu kuzingatia yafuatayo:

- Upatikanaji wa vyakula katika mazingira husika;
- Uwezo wa kununua au kupata chakula;
- Tabia za ulaji;
- Utaratibu wa kazi; na
- Tabia ya unywaji wa pombe.

Ulaji unaoshauriwa kwa wagonjwa wa kisukari

Kumbuka kuwa mgonjwa wa kisukari hahitaji kula chakula maalum bali anashauriwa kufuata kanuni za ulaji unaofaa:

- a) *Kula mlo kamili* (angalau mara 3 kwa siku) kwa kuzingatia muda uliojipangia kwani haishauriwa kukaa na njaa kwa muda mrefu. Hii itamsaidia mgonjwa kuweza kudhibiti kiwango cha sukari katika damu na kiasi cha chakula kwani anapokuwa na njaa kali huweza kuongeza kiasi cha chakula anachokula.
- b) *Kudhibiti kiasi cha nishati – lishe katika chakula.* Kiasi kitegemee mahitaji ya mtu binafsi. Ainisha chanzo cha nishati - lishe kwenye mlo wa mgonjwa na jadili mbinu za kupunguza.
- c) *Kuongeza ulaji wa vyakula vyenye makapi - mlo kwa wingi.* Kiasi kikubwa cha nishati – lishe katika mlo kitokane na vyakula vyenye makapi – mlo kwa wingi ambavyo huyeyushwa na kufyonzwa na mwili taratibu (*simple vis complex carbohydrates*), na hivyo kasi ya kuongezeka sukari katika damu hupungua.
- d) *Kupunguza kiasi cha mafuta.* Epuka mafuta yenye asili ya wanyama na punguza kiasi cha mafuta mengine. Mafuta yanapaswa kuchangia asilimia 35 ya nishati – lishe inayohitajika kwa siku. Ainisha chanzo cha mafuta katika mlo wa mgonjwa na jadili mbinu za kupunguza.

- e) *Kupunguza uzito kama umezidi au dhibiti uzito wa mwili.* Ni muhimu kuwa na uzito unaoshauriwa kulingana na urefu wake. Jadili mbinu mbalimbali za kupunguza uzito.
- f) *Kula vyakula vya aina mbalimbali, badili hata vile ambavyo viko kwenye kundi moja la chakula.* Virutubishi vilivyo kwenye vyakula mbalimbali hutofautiana kwa kiasi na ubora.
- g) *Kula mbogamboga kwa wingi katika kila mlo.*
- h) *Kula tunda katika kila mlo.* Kula kipande cha kadiri na ikiwezekana usimanye..
- i) *Epuka kunywa pombe.* Pia haishauriwi kunywa pombe kali kwani huweza kuleta madhara kwenye ini. Unywaji wa pombe kabla ya kula chakula huweza kusababisha damu sukati.
- j) *Epuka sukari na vyakula vyenye sukari nyingi* kama soda, keki, biskuti, pipi na asali. Asilmia 80 ya asali in sukari
- k) Zingatia usafi na usalama wa chakula na maji

Mambo mengine ya kuzingatia:

- Uzito wa mteja
- Mazoezi ya mwili

2. Mtu mwenye shinikizo kubwa la damu

Vipengele vya majadiliano:

- Rahim Athumani ana umri wa miaka 45
- BMI = 31 (kiribatumbo/obesity)
- Mazoezi (hatembeji kwa muda mrefu na hutazama luninga)
- Hupendelea vyakula vya asili ya wanyama vilivyokaangwa
- Hupendelea nyama iliyonona
- Hula asusa zisizo bora kilishe (mafuta mengi)
- Hupendelea kula maini na mayai (lehemu nyingi)
- Huweka chumvi mezani wakati wa kula
- Hunywa bia 2 mara 3 wiki
- Ana kazi nyingi (msongo wa mawazo)

Ulaji unaoshauriwa kwa mtu mwenye shinikizo kubwa la damu

Rahim Athumani anashauriwa kutumia dawa kama alivyoelekezwa na daktari na asiache anapohisi nafuu. Anashauriwa:

- Kupunguza uzito uliozidi
- Kupunguza kiasi cha chakula, hususan vyenye nishati-lishe kwa wingi
- Kuepuka vyakula vyenye chumvi nyingi, ikiwa ni pamoja na vile vilivyosindikwa kwa chumvi;
- Kutumia viungo mbalimbali kuongeza ladha ya chakula (tangawizi, vitunguu saumu, madalasinini);
- Kuepuka vyakula vyenye mafuta na sukari nyingi;
- Kula mlo kamili mara tatu kwa siku ukizingatia kula vyakula vya aina mbalimbali;
- Kula matunda na mbogamboga kiasi cha kutosha katika kila mlo
- Kutumia nafaka zisizokobolewa na vyakula vya jamii ya kunde kwa wingi.
- Kuepuka mafuta yenye asili ya wanyama

