

Republic of Kenya



MINISTRY OF HEALTH

Division of Non-Communicable Diseases Prevention and Control

A COMPETENCY-BASED TRAINING CURRICULUM FOR HEALTH CARE PROVIDERS ON DIABETES MELLITUS



November 2021

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Foreword

Diabetes is a major health issue that has reached alarming levels globally: today, more than 463 million people are living with diabetes worldwide, this figure is projected to rise to 700 million by 2045 if nothing is done. It is a threat to global health and respects neither socioeconomic status nor national boundaries. Halting and reversing the rising burden of NCDs is well enshrined in Kenya's Health Policy 2014-2030 as one of the key pillars to help the country attain the highest possible standards of health in a manner responsive to the health needs of the population.

People living with diabetes are at risk of developing a number of serious and life-threatening complications, leading to an increased need for medical care, a reduced quality of life, and undue stress on families. Diabetes and its complications, if not well managed, can lead to frequent hospital admissions and premature death. Globally, diabetes is among the top 10 causes of death causing 4.2 million deaths each year (IDF 2019).

Building the capacity of health care workers is one of the strategies to address the rising burden of diabetes and its complications. Although health care professionals have undergone related training during their pre-service training, there is a need to build their capacity to be at par with the emerging trends of diabetes and other non-communicable diseases. The Ministry of Health is the forefront in developing a training curriculum for health care providers in the prevention and management of diabetes. This Competency Based Curriculum in diabetes mellitus aims to build the knowledge and skills of health care providers to effectively prevent, diagnose and manage diabetes and related NCDs at health facility and community levels.

To achieve this goal, the Ministry of Health collaborated with County Governments, Novo Nordisk, Kenya Conference of Catholic Bishops (KCCB), Christian Health Association of Kenya (CHAK), National Regulatory bodies for health professionals and selected diabetes and curriculum development specialists to ensure that this Competency Based Curriculum is successfully developed and rolled out to improve the capacity of health care providers.

The curriculum integrates use of innovative approaches on diabetes management such as mentorship, use of technology and practicum so as to increase the health care providers access to the evidence based content and up to date materials on diabetes.

The development of this Competency Based Curriculum for Diabetes mellitus provides a standard guideline on training of health care providers on diabetes management at all levels of health care.



Dr. Patrick Amoth, EBS

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Preface

Prevention and management of diabetes and other NCDs is a key pillar to the attainment of Universal Health Coverage (UHC). Kenya has committed herself to implement UHC as one of the big four agenda of Government. UHC will ensure that ALL Kenyans can access and receive quality promotive, preventive, curative, rehabilitative and palliative health services without suffering financial hardships.

The development of this Competency Based Curriculum training is meant to standardize the clinical practice in management of diabetes that will ensure the attainment of universal access to interventions addressing diabetes and its complications. It also forms a part of the UHC delivery support documents and will contribute to the achievement of its overall aim. The lack of a continuous capacity building of health care professionals and programmes to train health them continues to be the most critical issue impeding the delivery of high quality diabetes education and care in Kenya. It is in this light, that the Ministry of Health, took it upon herself to develop a training curriculum that will go a long way in bridging the gap between what is offered in our training institutions and the actual field practice.

This course is developed to enable health care workers diagnose, manage and prevent diabetes. This will in turn lead to a reduction of the diabetes burden on the health care system and aligns with the World Health Assembly (WHA) 65.8 declaration to halt the rise in diabetes and obesity by 25% by 2025 (WHO, 2012). It is also a response to Sustainable Development Goal (SDG) number 3, and will foster the wellbeing and quality of life for people living with diabetes.

The main purpose of this course is therefore to develop the capacity of health care workers to acquire in-depth theoretical and practical skills and demonstrate competencies in diabetes management at all levels of health care services. I believe that this course will go a long way in strengthening the capacity of the health care providers in diabetes management across the country.



Dr. Andrew Mulwa

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Acknowledgement

The development of this Competency Based Curriculum training for health care providers in diabetes prevention and management was a concerted effort of many individuals from Ministry of Health, County Governments, Kenya Medical Training College, Christian Health Association of Kenya (CHAK), Kenya Conference of Catholic Bishops (KCCB) and Kenyatta National Hospital (KNH).

We will forever be grateful to Dr. Solomon Kilaha, from KMTC, for leading a dedicated and committed team that made the process of developing this training package possible. The Ministry of Health also acknowledges the following people for their immense contribution toward the successful completion of this curriculum, Dr. Anne Wairagu, Consultant Physician (Kiambu County), Dr. Florence Keli; Consultant Physician (University of Nairobi), Isaac Miruka, Diabetes Nurse Educator and Clinical Podiatrist (Kenyatta National Hospital), Dr. Elizabeth Onyango; Head, Division of Non-communicable Diseases Prevention and Control, Dr. Oren Ombiro; Technical Advisor (Department of Non-communicable Diseases), and Betty Okere, Registered Dietician.

Special recognition also goes to Mr. Zacharia Ndegwa (MOH), Dorothy Owegi (Novo Nordisk) and Lilian Ndomoto (AMH and Nazareth Hospital) for their tireless efforts in ensuring that all partners and collaborators who are involved in this process are accorded the necessary support and materials needed to finalize this curriculum. I acknowledge the support provided by the Base of Pyramid (BoP) project by Novo Nordisk in ensuring that this curriculum is finalized and disseminated. I also acknowledge other organizations whose documents were used during harmonization and creation of this standardized curriculum.

I am grateful to all other individuals who reviewed and participated in one way or another in the successful completion of this Competency Based Curriculum on diabetes mellitus.



Dr. Ephentus Maree

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Executive Summary

Diabetes care is a lifelong responsibility that requires people living with the disease to change many habits, such as what they eat, when they exercise and how frequently they visit a health care provider. They may need to take daily medications or insulin to keep their blood glucose levels in check. Having diabetes means that one has to adjust his lifestyle at work and at home. But these changes don't mean one won't be able to succeed at work or enjoy a healthy and a fulfilling life. People living with diabetes have equal rights with those without the condition and should be protected from all forms of discrimination through provision of quality and affordable health care.

Diabetes, being a complex disorder, necessitates a systematic approach in the organization of care. In order to achieve this, there are several elements that need to be addressed. These include: a well-trained and dedicated personnel, management and referral protocols & algorithms, continuous supply of essential medicines and technologies, a registry of all patients in care in order to facilitate recall for non-attendance and for specific aspects of regular care and annual review charts that are useful for follow up of clinical and biochemical measurements.

In order to provide high quality diabetes care, this training curriculum has been developed for sound clinical understanding of diabetes, its complications and related outcomes. Consequently, there is considerable emphasis placed on the pathophysiology, diagnosis and clinical management of diabetes.

This competence based curriculum will build the capacity of the learners to;

1. Provide curative, promotive and preventative diabetes care
2. Assess, diagnose and document cases of diabetes
3. Develop and implement patient management plans
4. Collect, document, and interpret data for diabetes management
5. Generate and manage data which will inform policy and diabetes management
6. Design community-based strategies for diabetes management
7. Identify research gaps and come up with solutions.

In this way, the curriculum will ensure that Kenya has a reservoir of a well-trained health professionals in diabetes management who will be integrated with clinical care team, thus forming the key to successful prevention and management of diabetes in Kenya.

This training curriculum covers the whole spectrum of diabetes prevention and control, it will cover the following areas;

1. Introduction to Diabetes Mellitus
2. Management of Diabetes Mellitus
3. Complications and Comorbidities of Diabetes Mellitus
4. Management of Diabetes in Special Situations
5. Chronic Complications of the Foot
6. Medical Nutrition Therapy
7. Living with Diabetes
8. Organization of Diabetes Comprehensive Care.

1.0 Introduction

1.1 Background

Kenya is undergoing an epidemiological transition marked by a decline in morbidity and mortality due to communicable conditions, and an increase in the burden of non-communicable diseases (NCDs), such as diabetes, cancers, cardiovascular diseases and chronic respiratory infections. In order to reverse this rising burden, the Kenya Health Policy 2014-2030 has laid down six key strategic objective that gives directions to ensure significant improvement in overall status health in Kenya in line with the country's long term development agenda targets. The Strategic objective number 2 of the Kenya Health Policy defines the road-map of halting and reversing the rising burden of non-communicable conditions, while the fifth strategic objective is focused on putting into place health promotion interventions that will address risk factors to health.

According to the STEP-wise survey 2015, the risk factors for NCDs in Kenya are increasing with about 6.5% of Kenyans (6.3% men; 6.8% women) not engaging in the recommended amount of physical activities, 94% of Kenyans do not consume sufficient fruits and vegetables as per the WHO recommendation of five servings of fruits and vegetables a day for most days in a week, about a quarter of Kenyans add salt to their food, while 28% always add sugar to their beverage and 40% use vegetable fat and or saturated fats. These risk factors are fueling the burden on NCDs

in Kenya with diabetes being at 2% of the adult population, hypertension being at 24% and cancers at 9%. One of the key interventions to address this rising burden of NCDs will be the training of the health workforce in prevention and management of these conditions. Evidence shows that there is a big gap in knowledge of diagnosis and management of NCDs among the health workforce in Kenya (PIC4C survey, 2017). This course is developed to enable health care workers to diagnose, manage and prevent diabetes. This will in turn lead to a reduction of the diabetes burden on the health care system and aligns with the World Health Assembly (WHA) 65.8 declaration to halt the rise in diabetes and obesity by 25% by 2025 (WHO, 2012). It is also a response to Sustainable Development Goal (SDG) number 3, and will foster the well-being and quality of life for people living with diabetes.

1.2 Rationale

According to WHO (2015), the burden of diabetes is increasing globally, particularly in developing countries. Diabetes is a major cause of premature illness and death in most countries. More than three quarters of deaths due to diabetes occur in people below the age of 60 years. There is a threat to Africa's economic development as diabetes is prevalent in people in their prime productive years.

Kenya has a fully implemented inter-Ministry diabetes plan. A Non-Communicable Disease plan exists but has not been implemented. It is in this view that there is need to increase understanding of the burden of diabetes, its risk factors, prevention and management. It is also important that health care professionals are equipped with tools, knowledge, skills and attitude to combat diabetes.

1.3 Target Group

The course is designed for in-service training middle-level health workers (with a diploma) who are involved in management of diabetes mellitus. These health workers include clinical officers, nurses, pharmaceutical technologists, laboratory technologists and nutritionists in public, NGOs and the private sector in Kenya.

1.4 Purpose

The main purpose of this course is to develop the skills, competencies and capacity of health care workers to acquire in depth theoretical and practical skills, and demonstrate competencies in diabetes management at all levels of health care service provision.

1.5 Course Structure

Module Name	Hours
Module 1: Introduction to Diabetes Mellitus	3
Module 2: Management of Diabetes Mellitus	3
Module 3: Complications and Comorbidities of Diabetes Mellitus	3
Module 4: Management of Diabetes Mellitus in Special Situations	2
Module 5: Chronic complications of the Foot	3
Module 6: Medical Nutrition Therapy	3
Module 7: Living with Diabetes	2
Module 8: Organization of Diabetes Comprehensive Care	3
Total	27

1.6 Course Evaluation

To assess the attainment of knowledge, skills and competencies the participants will undertake a pre-test, post-test and a structured competencies assessment tool.

Module 1: Introduction to Diabetes Mellitus



Module 1: Introduction to Diabetes Mellitus

The Concept of Diabetes Mellitus

1. Classification of Diabetes Mellitus
2. Pathogenesis and Pathophysiology of Diabetes Mellitus
3. Risk Factors of Diabetes Mellitus
4. Signs and Symptoms of Diabetes Mellitus
5. Diagnosis of Diabetes Mellitus
6. Screening Criteria for Type 2 Diabetes Mellitus.

Module 1: Introduction to Diabetes Mellitus 4 Hours 20 Minutes

Module Competence

This module is designed to enable the participant demonstrate understanding of Diabetes Mellitus.

Module Outcomes

By the end of this module, the participant should;

1. Explain the concept diabetes mellitus
2. Classify diabetes mellitus
3. Explain the pathogenesis and pathophysiology of diabetes mellitus
4. Explain the risk factors of diabetes mellitus
5. Explain the signs and symptoms of diabetes mellitus
6. Make a diagnosis of diabetes mellitus
7. Explain the screening criteria for patients with type 2 diabetes mellitus.

Module Units

Name	Duration		
	Theory	Practical	Total
1. Concept of diabetes mellitus	20min	10min	30min
2. Classification to diabetes mellitus	30min	0min	30min
3. Pathogenesis and pathophysiology of diabetes mellitus	60min	0min	60min
4. Risk factors of diabetes mellitus	30min	0min	30min
5. Signs and symptoms of diabetes mellitus	30min	0min	30min
6. Diagnosis of diabetes mellitus	30min	30min	60min
7. Screening criteria for type 2 diabetes mellitus	20min	0min	20min

Module Content

Concept of Diabetes Mellitus; definition of diabetes mellitus, glucose and fat metabolism, video demonstration of blood glucose metabolism, epidemiology of diabetes mellitus. **Classification of Diabetes Mellitus;** type 1 diabetes mellitus, type 2 diabetes mellitus, distinction between type 1 and type 2 diabetes, overlap of diabetes mellitus, gestational diabetes mellitus, other forms of diabetes mellitus, pre-diabetes. **Pathogenesis and Pathophysiology of Diabetes Mellitus;** etiology and pathophysiology of type 1 diabetes mellitus, etiology and pathophysiology of type 2 diabetes mellitus, the ominous octet, etiology and pathogenesis of other types of diabetes mellitus. **Risk Factors to Diabetes Mellitus;** for type 1 DM, modifiable and non-modifiable risk factors for type 2DM, other specific types of diabetes mellitus. **Signs and Symptoms of Diabetes Mellitus;** symptoms of hyperglycemia, T1DM, T2DM clinical features, others. **Diagnosis of Diabetes Mellitus;** diagnostic criteria for diabetes and pre-diabetes, practical session- blood sugar testing, demonstration of capillary blood sugar testing, description of the OGTT procedure. **Screening criteria for type 2 Diabetes Mellitus;** importance of screening, who to screen, screening criteria, screening tests.

Module Teaching Strategies

1. Interactive Lectures
2. Clinical Practice

Module Teaching/Learning Resources

1. Laptops
2. White Board Markers
3. Flipcharts
4. Food Models
5. Charts
6. Calculators
7. Food/Diet Charts
8. Resource Books.

Module Assessment Strategies

1. Pre-test
2. Multiple Choice Questions
3. True/False Questions
4. Filling in blank spaces
5. Case Scenarios
6. Case Studies
7. Post-test.

Module References/Further Readings

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Module 2: Management of Diabetes Mellitus



Module 2: Management of Diabetes Mellitus

1. Pillars of Diabetes Management
2. Management Protocols for Diabetes Mellitus
3. Self-Blood Glucose Monitoring
4. Patient and Family Education.

Module 2: Management of Diabetes Mellitus

3 Hours 25 minutes

Module Competence

This module is designed to enable the participant manage patients with diabetes mellitus in relation to blood glucose monitoring and patient/family education.

Module Outcomes

By the end of this module, the participant should;

1. Demonstrate the understanding of the six pillars of diabetes management
2. Use the approved protocols for management of Diabetes Mellitus
3. Explain the rationale and schedule of blood glucose monitoring
4. Demonstrate understanding of patient and family education in diabetes mellitus.

Module Units

Name	Duration		
	Theory	Practical	Total
1. The 6 pillars of diabetes management	10min	0min	10min
2. Management protocols for diabetes mellitus	60min	30min	90min
3. Self-blood glucose monitoring	15min	30min	45min
4. Patient and family education	30min	30min	60min

Module Content

The 6 pillars of diabetes management; overall goals of management, management of Type 1 Diabetes Mellitus; goals of management, dietary/lifestyle modification, insulin therapy, types of insulin, mechanism of action, side effects, methods of insulin delivery, practical on insulin injection, demonstration (insulin pens, syringes and needles), insulin storage (in/out refrigerator), other therapies in type 1 DM, initial and follow up visits. **Management of Type 2 Diabetes Mellitus;** goals of management, dietary/lifestyle modification, choice of oral glucose lowering agents (OGLAs), categories of OGLAs, their mechanism of action, side effects and caution/contraindications, insulin therapy in type 2 diabetes mellitus, insulin initiation and intensification, barriers to insulin use in type 2 diabetes mellitus, reducing clinical inertia to insulin initiation, non-insulin based injectable agents, combination of different types of drugs and dose titration, follow up visits/annual review of patients, referral protocol to specialists. **Self-Blood Glucose Monitoring;** indications, benefits and frequency, blood glucose targets, pre-meal values, 2-hour post-meal values, Time in Range, optimal control, tools for monitoring; glucometers, continuous glucose monitor, blood sugar monitoring tool, blood sugar tracker tool. **Patient and Family Education;** diabetes self-management education (DSME), importance of diabetes self-management education, key areas of DSME, family education. what to educate, role of family, role of dm educator.

Module Teaching Strategies

1. Interactive lectures
2. Case presentations
3. Small group demonstrations
4. Clinical practice

Module Teaching/Learning Resources

1. Laptops
2. White board markers
3. Flipcharts
4. Food models
5. Charts
6. Calculators
7. Food/diet charts
8. Resource books
9. Injection sites charts
10. Items for demonstration on how to store insulin in absence of refrigerators,

Module Assessment Strategies

1. Pre-test
2. Multiple choice questions
3. True/false questions
4. Filling in blank spaces

5. Case scenarios
6. Case studies
7. Post-test.

Module References/Further Readings

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Module 3: Complications and Comorbidities of Diabetes



Module 3: Complications and Comorbidities of Diabetes Mellitus

1. Acute Complications of Diabetes Mellitus
2. Sick Day Management
3. Chronic Complications of Diabetes Mellitus
4. Comorbidities of Diabetes Mellitus.

Module 3: Complications and Comorbidities of Diabetes Mellitus 3 Hours

Module Competence

This module is designed to enable the participant manage acute and chronic complications and comorbidities of Diabetes Mellitus.

Module Outcomes

By the end of this module, the participant should;

1. Demonstrate understanding of the management of acute complications of diabetes mellitus.
What is Diabetes Keto-acidosis (DKA)?
2. Demonstrate understanding of the management of patients with diabetes mellitus during sick days
3. Demonstrate understanding of management of chronic complications of diabetes mellitus.
4. Demonstrate understanding of management of comorbidities of diabetes mellitus.

Module Units

Name	Duration		
	Theory	Practical	Total
1. Acute complications of diabetes mellitus	90min	0min	90min
2. Sick day management	30min	0min	30min
3. Chronic complications of diabetes mellitus	90min	0min	90min
4. Comorbidities of diabetes mellitus	30min	0min	30min

Module Content

Acute Complications of Diabetes Mellitus; definition, epidemiology, risk factors/precipitating factors, pathophysiology, symptoms and signs, laboratory diagnosis, imaging, goals of therapy, fluid management, insulin therapy, complications, differential diagnoses, complications, prevention of DKA, management of HHS, hypoglycemia and lactic acidosis. **Sick Day Management;** definition of sick day, aim of sick day management, metabolic disturbance as a result of inter-current illness, principles of sick day management, indications for hospital admission. **Chronic Complications of Diabetes Mellitus;** microvascular (DM nephropathy, DM retinopathy, peripheral neuropathy, autonomic neuropathy) sexual dysfunction, gastroparesis) and macrovascular complications (cerebrovascular accidents/stroke, coronary artery disease, peripheral vascular disease), pathogenesis, risk factors, clinical presentation, diagnosis, management and prevention, hypertension, dyslipidemia, obesity, heart failure, renal failure, screening for complications.

Module Teaching Strategies

1. Interactive lectures
2. Case presentation
3. Group discussions

Module Teaching/Learning Resources

1. Laptops
2. White board markers
3. Flip charts
4. Food models
5. Charts
6. Calculators
7. Food/diet charts
8. Resource books.

Module Assessment Strategies

1. Pre-test
2. Multiple choice questions
3. True/false questions
4. Filling in blank spaces
5. Case scenarios
6. Case studies
7. Post-test.

Module References/Further Readings

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29. www.ndei.org National Diabetes Education Initiative

Module 4: Management of Diabetes Mellitus in Pregnancy and Other Special Situations



Module 4: Management of Diabetes Mellitus in Pregnancy and Other Special Situations

1. Management of diabetes in pregnancy
2. Management of diabetes mellitus in other special situations.

Module 4: Management of Diabetes Mellitus in Other Special Situations

2 Hours

Module Competence

This module is designed to enable the participant manage patient with diabetes mellitus in special situations.

Module Outcome

By the end of this module, the participant should manage diabetes mellitus in pregnancy, during fasting, surgery, travel, and school, in the elderly, in patients with Covid-19, TB and HIV, emerging and re-emerging.

Module Units

Unit Name	Duration		
	Theory	Practical	Total
1. Management of diabetes in pregnancy	60min	0min	60min
2. Management of diabetes mellitus in other special situations	100min	0min	100min

Module Content

Management of Diabetes Mellitus in Pregnancy; gestation diabetes mellitus, pre-existing diabetes in pregnancy, burden of Gestational diabetes mellitus, pathophysiology of GDM, risk factors of GDM, impact of maternal hyperglycemia during pregnancy, screening for GDM, glucose monitoring during pregnancy, management of GDM. and post delivery follow up screening.

Management of Diabetes in Special Situations; fasting, surgery, travel (key self-help tools in your toolbox during travel), driving, school/ adolescence, elderly, diabetes and tuberculosis, diabetes and HIV, COVID 19, emerging and reemerging situations, screening for depression in diabetic patients.

Module Teaching Strategies

1. Interactive lectures
2. Case studies
3. Case presentations

Module Teaching/Learning Resources

1. Laptops
2. White board markers
3. Flip charts
4. Food models
5. Charts
6. Calculators
7. Food/diet charts
8. Resource books.

Module Assessment Strategies

1. Pre-test
2. Multiple choice questions
3. True/false questions
4. Filling in blank spaces
5. Case scenarios
6. Case studies
7. Post-test

Module References/Further Readings

1. Pearson, E.R & McCrimmon, R.J. (2014). Diabetes Mellitus. In: B.R Walker, N.R Colledge, S.H. Ralsto & I.D Penman (Eds), Davidson's Principles and Practices of Medicine, (22nd Ed., pp, 820-824). Edinburgh, Churchill Livingstone, Elsevier.
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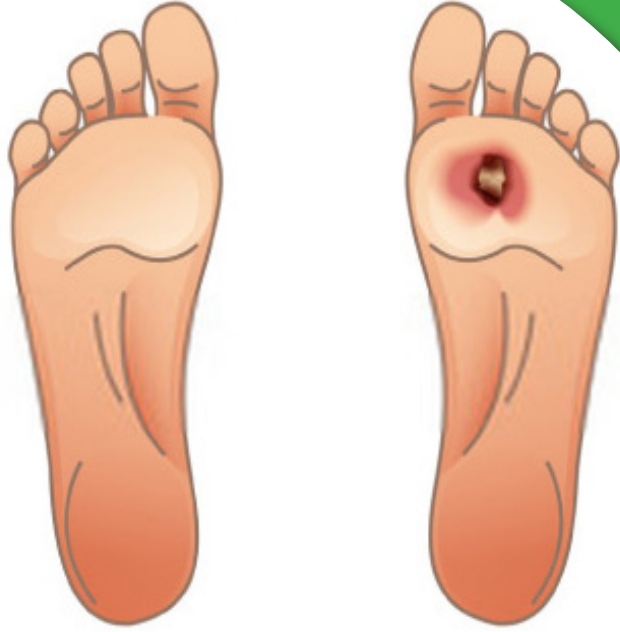
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Module 5: Diabetes Foot Complications



HEALTHY FOOT

DIABETIC FOOT

Module 5: Diabetes Foot Complications

Diabetes Foot Complications

1. Pathophysiology and pathogenesis of diabetes foot complications
2. Classify diabetes foot complications
3. Protocols in foot care management
4. Diagnose diabetes foot ulcerations
5. Principles of diabetes foot ulceration management
6. Interdisciplinary team approach in the management of foot complications
7. The impact of the foot complications
8. The lower extremity amputation prevention program
9. The ideal diabetes foot care team model.

Module Competence

This module is designed to enable the participant manage foot complications in diabetes mellitus.

Module Outcomes

By the end of this module, the participant should;

1. Explain the pathophysiology and pathogenesis of diabetes foot complications
2. Classify diabetes foot complications according to signs, symptoms and examination
3. Use the protocols in foot care management
4. Diagnose diabetes foot ulcerations according to classification
5. Explain the principles of diabetes foot ulceration management
6. Explain the role of interdisciplinary team approach in the management of foot complications
7. Explain the overall impact of the foot complications on the general health, socio-economic and systems.
8. Explain the lower extremity amputation prevention program in foot complications.
9. Explain the ideal diabetes foot care team model.

Module Units

Name	Duration		
	Theory	Practical	Total
1. The pathophysiology and pathogenesis of foot complications	30 min	0min	30min
2. Classification of foot complications	0min	45min	45min
3. Management protocols of foot complications	0min	45min	45min
4. Diagnosis of diabetes foot ulceration according to classification	30min	0min	30min
5. Principles of diabetes foot ulceration management	30min	90min	120min
6. The Interdisciplinary team approach to diabetes foot complications	20min	0min	20min
7. The impact of the foot complications	20min	0min	20min
8. The amputation prevention program	20 min	0 min	20 min
9. The ideal diabetes foot care model	20min	0 min	20 min

Module Content

Pathophysiology and pathogenesis of foot complications; neuropathy, ischemia, structural deformity. **Classification of foot complications;** neuropathic, Ischemic, Neuroischemic. **Management protocols of foot complications;** management of foot complications , preventive foot care, treatment of existing foot complications, treatment of active foot ulcerations, rehabilitation services, educational control, metabolic control, vascular control, mechanical control, biological control, wound care control. **Classification of diabetes foot ulceration;** diagnosis criteria, classified by the predominant complication. **Principles of diabetes foot ulceration management;** wound bed preparation – Tissue viability, Infection/Inflammation, Moisture balance, Epithelia wound edge (TIME). **Interdisciplinary team care approach to diabetes foot complications;** holistic, multidisciplinary skilled care approach. **Impact of the foot complications;** healthcare systems, health economics, comorbidity, mortality. **Lower extremity amputation prevention program;** (LEAP) annual foot screening, patient education, daily self –inspection, footwear selection, management of simple foot problems. **Ideal diabetes foot care model;** systems, education guidelines, screening, risk reduction, footwear/orthotics, treatment, auditing.

Module Teaching Strategies

1. Interactive lectures
2. Case presentation
3. Group discussions
4. Demonstrations

Module Assessment Strategies

1. Pre-test
2. Multiple choice questions
3. True/false questions
4. Filling in blank spaces
5. Case scenarios
6. Case studies
7. Post-test

Module References/Further Readings

1. Bakker K, Apelqvist J, Lipsky BA, Van Netten JJ; International Working Group on the Diabetic Foot. The 2015 IWGDF guidance documents on prevention and management of foot problems in diabetes: development of an evidence-based global consensus. *Diabetes Metab Res Rev*. 2016 Jan;32 Suppl 1:2-6. doi: 10.1002/dmrr.2694. PMID: 26409930.
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3. International Working Group on the Diabetic Foot F L Game , J Apelqvist , C Attinger , A Hartemann , R J Hinchliffe , M Löndahl , P E Price , W J Jeffcoate , International Working Group on the Diabetic Foot: Effectiveness of interventions to enhance healing of chronic ulcers of the foot in diabetes: a systematic review
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Module 6: Medical Nutrition Therapy



Module 6: Medical Nutrition Therapy

1. The concept of medical nutrition therapy
2. Goals of medical nutrition therapy
3. Diets in medical nutrition therapy in diabetes
4. Energy balance, overweight and obesity
5. Nutrition interventions in acute management of diabetes
6. Medical nutrition therapy in special situations
7. Common myths in medical nutrition therapy.

Module 6: Medical Nutrition Therapy 3 Hours 20 Minutes

Module Competence

This module is designed to enable the participant provide appropriate medical nutrition therapy.

Module Outcomes

By the end of this module, the participant should;

1. Explain the concept of medical nutrition therapy in diabetes management
2. Explain the goals of medical nutrition therapy and the various diets used
3. Explain the concept of energy balance, overweight and obesity in relation to diabetes
4. Explain the nutrition interventions in management of acute diabetes complications
5. Explain the common myths in medical nutrition therapy and diabetes.

Module Units

Unit Name	Hours		
	Theory	Practical	Total
1. The Concept of Medical Nutrition Therapy	15 min	0 min	15 min
2. Goals of Medical Nutrition Therapy	30 min	0 min	30 min
3. Diets in Medical Nutrition Therapy in diabetes	30 min	30 min	60 min
4. Energy balance, overweight and obesity	30 min	0 min	30 min
5. Nutrition interventions in acute management of diabetes	30 min	20 min	50 min
6. Medical Nutrition Therapy in special situations	30 min	0min	30 min
7. Common myths in medical nutrition therapy	15 min	0 min	15 min

Module Content

The Concept of Medical Nutrition Therapy; basic MNT terminologies, understanding MNT and diabetes, steps in MNT (assessment of client nutritional needs, nutritional screening and identifying those at risk, treatment and intervention, nutritional support (counselling and follow up). **Goals of Medical Nutrition Therapy;** near normal blood glucose levels, lipid targets, BP targets at an individualized level, body weight goals and targets, healthy eating with encouragement of nutrient dense healthy food consumption habits, delay and/or prevention of diabetes related complications, individual nutrition needs based on personal, medical, religious and cultural preferences, health literacy and numeracy, ability to access healthy food choices, willingness and ability to make behavioural changes, overcoming existing barriers to change, pleasure eating and encouraging messages, day to day diabetes practical tools, single foods and pockets of nutrients found in food. **Diets in Medical Nutrition Therapy in diabetes;** plate method, hand jive portion guide, carb counting, exchange list, GI and GL of common foods, low carb; ketogenic diets. Energy balance, overweight and obesity; definitions, nutrition deficiencies, excess nutrient intake. **Nutrition Interventions in acute management of diabetes;** utilization of MNT concept in acute management, DKA management/feeding (therapeutic diets). MNT in special situations: Nutrition and Ramadhan, nutrition and CKD, nutrition and GDM. **Common myths in Medical Nutrition Therapy;** eating of sugar or sweets, people likely to be affected by type 2, which type is a more serious condition, which type of diabetes is experienced by the level of sugars, eating of brown foods in helping to manage diabetes, diabetics and eating of meat or fat, people with diabetes and walking around with sweets or juice.

Module Teaching Strategies

1. Interactive Lectures
2. Case Studies
3. Case Presentations

Module Teaching/Learning Resources

1. Laptops
2. White Board Markers
3. Flipcharts
4. Food Models
5. Charts
6. Calculators
7. Food/Diet Charts
8. Resource Books.

Module Assessment Strategies

1. Pre-test
2. Multiple Choice Questions
3. True/False Questions

4. Filling in blank spaces
5. Case Scenarios
6. Case Studies
7. Post-test

Module References/Further Readings

1. American Diabetes Association (2017). Diabetes care in the hospital. Diabetes Care, 5 120- 5 127. care.diabetesjournals.org
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Module 7: Living With Diabetes and Diabetes Education



Source - National Jewish Health at <https://my.njhealth.org/PatientPortal>

Module 7: Living With Diabetes and Diabetes Education

1. Principles of Diabetes Self-Management Education and Support
2. Diabetes Self-Management in Patient Empowerment
3. Diabetes Psychosocial Challenges and its Management

Module 7: Living With Diabetes and Diabetes Education

4 Hours

Module Competence

This module is designed to enable the participant demonstrate understanding of diabetes self –management education/support.

Module Outcomes

By the end of this module, the participant should;

1. Explain the principles of diabetes self -management education and support
2. Explain diabetes self-management in regard to patient empowerment
3. Describe the diabetes psychosocial challenges and its management.

Module Units

Name	Duration		
	Theory	Practical	Total
1. Diabetes self-management education and support	60min	60min	120min
2. Patient empowerment	30min	30min	30min
3. Psychosocial management and management	30min	30min	60min

Module Content

Diabetes self-management education/support; education process, objective, principles of diabetes self-management education, mode, barriers of delivery, the role of diabetes educator. **Patient empowerment;** process, assessment, key areas, characteristics. **Psychosocial challenges and management;** challenges, signs/symptoms, assessment, management/recommendations, psychosocial care should be integrated with collaborative, patient-centered medical care and provided to all people with diabetes, rationale, optimizing health outcomes and health-related quality of life, Psychological aspects of living with diabetes.

Module Teaching Strategies

1. Brainstorming
2. Interactive lectures
3. Case presentation
4. Group discussions

Module Teaching/Learning Resources

1. Laptop
2. Projector
3. Pointer
4. Power extension
5. Stationaries
6. Insulin syringes, insulin pens, different types of insulin samples
7. Insulin injection sites chart
8. Cotton wool

Module Assessment

Pre-test

Multiple choice questions

True/false questions

Filling in blank spaces

Case scenarios

Case studies

Post-test

Module References/Further Readings

1. Bakker K, Apelqvist J, Lipsky BA, Van Netten JJ; International Working Group on the Diabetic Foot.
2. The 2015 IWGDF guidance documents on prevention and management of foot problems in diabetes: development of an evidence-based global consensus.
3. Diabetes Metab Res Rev. 2016 Jan;32 Suppl 1:2-6. doi: 10.1002/dmrr.2694. PMID: 26409930.
4. Game F; Attinger C, Hartemann A, Hinchliffe RJ, Löndahl M, Price PE, Jeffcoate WJ; IWGDF guidance on use of interventions to enhance the healing of chronic ulcers of the foot in diabetes.
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Module 8: Organization of Diabetes Comprehensive Care



Module 8: Organization of Diabetes Comprehensive Care

1. The Concept of Comprehensive Diabetes Care
2. Components of Diabetes Comprehensive Care Checklist
3. Perspectives of Leadership and Governance in Diabetes Prevention and Care
4. Policy and Regulatory Framework for Prevention and Care of Diabetes.

Module 8: Organization of Diabetes Comprehensive Care

3 Hours

Module Competence

This module is designed to enable the participant to reorganize the provision of diabetes care into a comprehensive care.

Module Outcomes

By the end of this module, the participant should;

1. Explain the concept of comprehensive diabetes care
2. List the components of the comprehensive checklist for the provision of diabetes care
3. Explain leadership and governance perspectives of diabetes prevention and care at all government levels
4. Explain the relevant policies and regulatory frameworks for prevention and care of diabetes.
5. Explain the concept of data use for decision-making and use the MOH diabetes and hypertension.

Module Units

No	Name	Duration		
		Theory	Practical	Total
1	The Concept of Comprehensive Diabetes Care	45min	30min	75min
2	Components of Diabetes Comprehensive Care Checklist	30min	15min	45min
3	Perspectives of Leadership and Governance in Diabetes Prevention and Care	30min	0min	30min
4	Policy and Regulatory Framework for Prevention and Care of Diabetes	30min	0min	30min

Module Content

The Concept of Comprehensive Diabetes Care; introduction to the diabetes comprehensive care concept, diabetes comprehensive care team, health workforce, Diabetes Comprehensive Care Clinic (DCCC). **Components of Diabetes Comprehensive Care Checklist;** checklist for self-monitoring of blood glucose and diabetes education, checklist for nutrition and meal planning, checklist for the provision of diabetes foot care education, checklist for the provision of essential medicine and technologies, facility preparedness self-assessment checklist. **Perspectives of Leadership and Governance in Diabetes Prevention and Care;** the roles and responsibilities of the national government, the roles and responsibilities of the county governments, strengthening the health information systems for diabetes prevention and care, data reporting tools, supply of essential medicine and technologies, strengthening health financing for diabetes prevention and care, personnel and services provided at each level of health care in diabetes comprehensive care concept. **Policy and Regulatory Framework for Diabetes Prevention and Care;** National Strategy for the Prevention and Control of Non-Communicable Diseases 2015-2020; Sustainable Development Goals, Global Framework for Monitoring of Non-Communicable Diseases, Policy Advocacy for Prevention and Care of Diabetes

Module Teaching/Learning Resources

1. Flow charts
2. Hand-outs
3. Markers
4. LCD
5. Computers
6. Guidelines
7. Manuals
8. Checklist for the provision of essential medicine and technologies
9. Facility preparedness self-assessment checklist
10. National strategy for the prevention and control of NCDs printout
11. International Frameworks and Protocols on prevention and control of NCDs
12. New MoH reporting tools print outs
13. Laptops.

Assessment Strategies

- Pre-test and post test
- Multiple Choice Questions (MCQs)

References/Further Readings

1. American Diabetes Association (2019). Standards of Medical care in diabetes - 2019. The Journal of Clinical and Applied Research and Education, (Volume 42, supplement 1)
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