DIABETES MANAGEMENT IN NIGERIA IN THE 21ST CENTURY: A FACT OR FARCE?

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Study Objectives

At the end of this lecture, participants will understand the meaning of:

- Pre-diabetes,
- Diabetes and various types of diabetes,
- Diagnoses,
- Causes and complications of diabetes, and
- Management of type 2 diabetes.
PRE-DIABETES

Pre-diabetes occurs when a person’s blood glucose level is higher than normal but not high enough for a diagnosis of diabetes. People with pre-diabetes have

- impaired fasting glucose (IFG) at range of 100-125 mg/dl after an overnight fast or
- impaired glucose tolerance (IGT) for 2-hr post 75g glucose challenge within the range of 140-199 mg/dl.

Some people have both IFG and IGT.

Pre-diabetes is a serious health condition that increases the risk of developing type 2 diabetes, heart disease, and stroke.
PREVALENCE OF PRE-DIABETES

In America, about 79 million (35%) of adults aged 20 years and older developed pre-diabetes. The Centers for Disease Control and Prevention (CDC) estimates that 1 of every 3 US adults had pre-diabetes in 2010. The vast majority of people living with pre-diabetes do not know they have it. A person with pre-diabetes has a blood sugar level higher than normal, but not high enough for a diagnosis.
Half of all Americans aged 65 years and older have pre-diabetes.

In Nigeria, there is lack of evidence. Without lifestyle changes to improve their health, 15% to 30% of people with pre-diabetes will develop type 2 diabetes within 5 years.
UNCOMMON CONDITIONS FORMS OF DIABETES

Other specific types include a wide variety of relatively uncommon conditions primarily,

- specific genetically defined forms of diabetes or
- diabetes associated with other diseases or drug use.
Definition of Diabetes Mellitus

- Diabetes mellitus is a group of metabolic diseases characterised and diagnosed by a chronic elevation of blood glucose (hyperglycaemia) that results from defects in insulin secretion, insulin action or both.
- This may be accompanied by various disturbances of carbohydrate, protein and fat metabolism.
DIAGNOSIS OF DIABETES

Diagnostic criteria by the American Diabetes Association (ADA) include the following:

- A 2-hour plasma glucose level of 200 mg/dL (11.1 mmol/L) (2hPG) or higher during a 75-g oral glucose tolerance test (OGTT),
- A1C A random plasma glucose of 200 mg/dL (11.1 mmol/L) or higher in a patient with classic symptoms of hyperglycemia or hyperglycemic crisis
- Glycated hemoglobin;
- Fasting plasma glucose (FPG): A fasting plasma glucose (FPG) level of 126 mg/dL (7.0 mmol/L) or higher
DIAGNOSIS OF DIABETES

- Oral glucose tolerance test (OGTT)
- Plasma glucose (PG).

A hemoglobin A1c (HbA1c) level of 6.5% or higher should be a primary diagnostic criterion.

Indications for diabetes screening in asymptomatic adults includes the following:

- **Sustained blood pressure > 135/80 mm Hg**
- **Overweight** and one or more other risk factors for diabetes (e.g., first-degree relative with diabetes, BP > 140/90 mm Hg, and HDL < 35 mg/dL and/or triglyceride level > 250 mg/dL)

- ADA recommends screening at age 45 years in the absence of the above criteria.
Many patients with type 2 diabetes are asymptomatic. Clinical manifestations include the following:

- **Classic symptoms:**
  - Polyuria,
  - Polydipsia,
  - Polyphagia,
  - Weight loss
- **Blurred vision**
- **Lower-extremity paresthesias**
- **Yeast infections (e.g., balanitis in men)**
RISK FACTORS FOR TYPE 2 DIABETES

- **Overweight adult:** Body Mass Index $\geq 25$ kg/m$^2$
- **Family history:** have a first-degree relative with diabetes
- **Being Black**
- **History of gestational diabetes** or gave birth to a baby weighing $> 9$ lbs
- **Hypertension:** blood pressure $>140/90$ mmHg
- **Abnormal lipid levels:** HDL cholesterol level $< 35$ mg/dl; triglyceride level $> 250$ mg/dl
Risk Factors for Type 2 Diabetes

- **IGT or IFG:** on previous testing
- **Signs of insulin resistance:** such as acanthosis nigricans or polycystic ovarian syndrome (PCOS)
- **History of vascular disease:** diagnosed by physical exam and testing
- **Inactive lifestyle:** being physically active less than three times a week
- **In the absence of the above risk factors,** people age 45 and older are considered at risk and should be tested.
THREE MAIN TYPES OF DIABETES

1. **Type 1 diabetes**: occurs when the body’s own immune system destroys the insulin-producing cells of the pancreas (called beta cells).

2. **LADA**

**Diabetic Ketoacidosis** without insulin and because the cells are starved of energy, the body breaks down fat cells. Products of this fat breakdown include acidic chemicals called ketones that can be used for energy. The ketones begin to build up in the blood, causing an increased acidity. The liver continues to release the sugar it stores to help out.
THREE MAIN TYPES OF DIABETES..

2. **Type 2 diabetes**: once called non-insulin-dependent diabetes, is the most common form of diabetes, affecting 90% to 95% of people with diabetes. Unlike people with type 1 diabetes, the bodies of people with type 2 diabetes make insulin. But either their pancreas does not make enough insulin or the body cannot use the insulin well enough. This is called **insulin resistance**.

- **MODY**
Three main types of diabetes...

High glucose levels in the blood can damage the nerves and small blood vessels of the eyes, kidneys, and heart and lead to atherosclerosis, or hardening of the arteries that can cause heart attack and stroke.

Other problems associated with the buildup of glucose in the blood include:

- Dehydration
- Diabetic coma: hyperosmolar hyperglycaemic nonketotic coma

3. Gestational diabetes mellitus refers to glucose intolerance with onset or first recognition during pregnancy
WHO GETS TYPE 2 DIABETES?

Anyone can get type 2 diabetes. But those at highest risk for the disease are those who:

- Are over 45
- Are obese or overweight
- Have had gestational diabetes
- Have family members who have type 2 diabetes
- Have pre-diabetes
- Don't exercise
- Have low HDL cholesterol or high triglycerides
- Have high blood pressure
- Are members of certain racial or ethnic groups including:
  - Africans
MANAGEMENT OF DIABETES MELLITUS

Goals of treatment are as follows: To Prevent Diabetes Complications

- Micro vascular:
  - Neuropathy
  - Retinopathy
  - Nephropathy
- Macrovascular
  - Coronary,
  - Cerebrovascular,
- Peripheral vascular risk reduction through control of lipids and hypertension, smoking cessation
- Metabolic and neurologic risk reduction through control of glycemia
European Association for the Study of Diabetes (EASD) and the American Diabetes Association (ADA) place the patient's condition, desires, abilities, and tolerances at the center of the decision-making process.

The EASD/ADA position statement contains 7 key points:
1. Individualized glycaemic targets and glucose-lowering therapies
2. Diet, exercise, and education as the foundation of the treatment program
3. Use of metformin as the optimal first-line drug unless contraindicated
4. After metformin, the use of 1 or 2 additional oral or injectable agents, with a goal of minimizing adverse effects if possible
RECOMMENDATIONS FOR THE TREATMENT OF TYPE 2 DIABETES

5. Ultimately, insulin therapy alone or with other agents if needed to maintain blood glucose control
6. Where possible, all treatment decisions should involve the patient, with a focus on patient preferences, needs, and values
7. A major focus on comprehensive cardiovascular risk reduction
APPROACHES TO PREVENTION OF DIABETIC COMPLICATIONS

It include:

- HbA1c every 3-6 months
- Yearly dilated eye examinations
- Annual microalbumin checks
- Foot examinations at each visit
- Blood pressure < 130/80 mm Hg, lower in diabetic nephropathy
- Statin therapy to reduce low-density lipoprotein cholesterol
MANAGEMENT APPROACHES

Lipid management
To reduce the risk of cardiovascular disease, blood lipids need regular measurement and effective management - especially high LDL cholesterol, high total cholesterol, and low HDL cholesterol.

Blood pressure management
Medications used in the treatment of hypertension include

- thiazide diuretics,
- ACE inhibitors, angiotensin receptor blockers (ARBs),
- ACE inhibitor-diuretic combinations,
- beta blockers, and calcium channel blockers

Other components of comprehensive diabetes care include

Anti-platelet therapy.

Using aspirin therapy (75 mg/day) is recommended as a preventive strategy for cardiovascular events in those patients with diabetes who have a history of CVD or are at high CVD risk.
SERUM TRIGLYCERIDE LEVELS AND CLASSIFICATIONS

Serum triglyceride levels and classifications are as follows

- Less than 100 mg/dL - Optimal
- 101-150 mg/dL - Normal
- 150-199 mg/dL - Borderline
- 200-499 mg/dL - High
- 500 mg/dL or higher - Very high
Poor glycemic control may exacerbate periodontal disease and tooth decay. Conversely, periodontal disease may cause deterioration of glycemic control.

Depression management: The presence of diabetes may double the risk of depression.
KIDNEY DISEASE MANAGEMENT

Chronic kidney disease is defined as the persistent (at least 3 months), and usually progressive, reduction in estimated glomerular filtration rate (eGFR) to less than 60 mL/min/1.73 m², and/or albuminuria (a urinary albumin-to-creatinine ratio >30/mg/g). Kidney status should be annually assessed by a marker of damage, “spot” urine albumin-to-creatinine ratio, and an estimate of function, the GFR.
Medical nutrition therapy (MNT) is an integral component of diabetes management.

MNT is usually provided by a registered dietitian who assesses a patient’s nutritional status and collaborates with the patient to develop a personal meal plan.
NEUROPATHY MANAGEMENT

The early recognition and appropriate management of neuropathy is important because a number of treatment options exist for symptomatic diabetic neuropathy.

Most common among the neuropathies are chronic sensorimotor distal symmetric polyneuropathy (DPN) and autonomic neuropathy.
NEUROPATHY MANAGEMENT

All patients should be screened for distal symmetric polyneuropathy (DPN) at diagnosis and at least annually thereafter, using simple clinical tests. Educate all patients about self-care of the feet.
Erectile dysfunction (impotence) occurs when a man can no longer get or keep an erection firm enough for sexual intercourse

**Symptoms:**
Erectile dysfunction symptoms may include:

- Trouble getting an erection
- Trouble keeping an erection
- Reduced sexual desire
OBESITY TREATMENT

- **Obesity treatment**
  - Medication therapy for weight management may be considered part of the ongoing treatment for all patients with diabetes who are overweight or obese.

- **Physical activity**
  - To improve glycemic control, assist with weight maintenance, and reduce cardiovascular disease risk, adults with diabetes.
  - At least 150 min/week of moderate-intensity aerobic physical activity (50-70 percent of maximum heart rate) and/or
  - Seventy-five to 90 min/week of vigorous aerobic exercise (>70 percent of maximum heart rate)
FOOT CARE

- Examine feet daily for discolouration, swelling, skin cracks, pain or numbness.
- Use the self help methods to help foot examination such as using mirrors.
- Foot hygiene (daily washing, followed by drying feet carefully especially between the fingers).
- Controlling water temperature before washing foot
- To avoid going barefoot or wearing shoes without socks.
- To choose shoes that are precisely in size. The best time to buy shoes is in the afternoon.
FOOT CARE

- To choose shoes that are precisely in size. The best time to buy shoes is in the afternoon.
- Cutting the fingernails directly.
- To avoid manipulation of foot lesions such as corn.
- To keep wet the dry surfaces of foot by moisturizing creams except between the fingers.
CONFUCIUS QUOTE.

“Tell me and I will forget”.

“Show me and I may remember”.

“Involveme and I will understand.”

Thank you for Listening

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