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The Indonesian Society of Endocrinology's Summary Article of Diabetes Mellitus National Clinical Practice Guidelines

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Introduction

Various epidemiological studies indicate increased incidence and prevalence rates of type 2 Diabetes Mellitus (DM) worldwide. Research in various areas in Indonesia in the 1980s indicated that the distribution of type 2 diabetes prevalence was 6.1% obtained in Manado. A study in Jakarta, the capital city of Indonesia, reported a steep rise in the prevalence of DM from 1.7% in 1982, 5.7% in 1993 to 12.8% in 2001.

The Central Bureau of Statistics Indonesia (2003) estimated that the number of adult population over 20 years old is approximately 133 million. Based on the prevalence of DM in urban (14.7%) and rural (7.2%) areas , it was predicted that by the year 2003, there shall be 8.2 million and 5.5 million people with DM in urban and rural areas, respectively. A study by the Health Research Association of the Ministry of Health in 2007, showed that the prevalence of DM in urban areas in Indonesia among 15 years old and above was 5.7%. The lowest and highest prevalence rates were 1.7% in Papua and 11.1% in North Maluku and West Kalimantan. The prevalence of impaired glucose tolerance (IGT) ranged from 4.0% in Jambi Province to 21.8% in West Papua Province.

Diabetes mellitus is a chronic disease. In addition to doctors, nurses, nutritionists and other health personnel, the role of patients and family members is very important. Education of patients and their families will provide further understanding about the course of the disease, prevention, complications, and likewise increase their participation in the management of DM.

To provide proper management and reduce the incidence of chronic complications, a standard guideline for managing DM is needed. Completion and periodic revision of standards of care should be ongoing and tailored to the latest scientific advances, to obtain maximum benefits for persons with diabetes.

This guideline contains the fourth revised consensus of "The Management and Prevention of DM in Indonesia." The latest revision was based on the agreement of diabetes experts in Indonesia which was initiated by the PB Perkeni (*Indonesian Society of Endocrinology*, ISE) meeting in Jakarta. The consensus has already been revised several times, from 1998, 2002, 2006 to 2010.

Definition

According to the American Diabetes Association (ADA) 2010, diabetes mellitus is a group of metabolic diseases with characteristic hyperglycemia that occurs because of abnormalities of insulin secretion, insulin resistance or both.

Classification

The classification of DM can be seen in Table 1.

Table 1. Classification of DM

Type 1	Beta cell destruction, usually leading to absolute insulin d eficiency Autoimmune Idiopathic
Type 2	Varied, ranging from dominant insulin resistance accompanied by relative insulin deficiency to predominantly insulin secretory defect with insulin resistance
Other types	Genetic defect of beta cell function Genetic defect of insulin Exocrine pancreatic disease Endocrinopathy Because the drug or chemical substance Infection Rare immunological causes Other genetic syndromes associated with DM
Gestational DM	Any degree of glucose intolerance with onset or first recognition during pregnancy

Diagnosis

Diabetes mellitus is diagnosed by venous blood glucose examination, which uses an enzymatic method. For monitoring the adequacy of treatment, capillary blood glucose (CBG) examination with a glucometer can be used.

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Diagnosis of DM

If there are classic symptoms (polyuria, polyphagia, polydipsia and weight loss with unknown etiology), then random blood glucose ≥200 mg/dL or fasting plasma glucose ≥126 mg/dL are sufficient to diagnose diabetes. If there are no classic symptoms, we need two abnormal blood glucose level results.

Although the oral glucose tolerance test (OGTT) by 75 g glucose load is more sensitive and specific than fasting plasma glucose checks, it has some limitations. It is difficult to perform repeatedly and is very rarely done in practice. If the OGTT results do not meet the diagnosis of diabetes, depending on the results obtained, it can be classified into either impaired glucose tolerance (IGT), impaired fasting glucose (IFG) or the combination of both (IGT-IFG).

1. IGT: IGT is established when the 2 hour post loading plasma glucose ranges from 140 to 199 mg/dL (7.8 to 11.0 mmol/L) and the fasting plasma glucose is < 100 mg/dL (5.6 mmol/L).
2. IFG: IFG is established when the 2 hour post loading plasma glucose is <140 mg/dL (7.8 mmol/L) and the fasting plasma glucose ranges from 100 to 126 mg/dL (5.6 to 6.9 mmol/L).
3. IGT-IFG: IGT-IFG is established when the 2 hour post loading plasma glucose ranges from 140 to 199 mg/dL (7.8 to 11.0 mmol/L) and the fasting plasma glucose ranges from 100 to 126 mg/dL (5.6 to 6.9 mmol/L).

Criteria for diagnosis of DM can be seen in Table 2.

Table 2. Criteria for diagnosis of DM

1. Classic symptoms of DM + random blood glucose ≥200 mg/dL (11.1 mmol/L)
   Random blood glucose is the result of examination at any time in a day regardless of the time of the last meal.
   Or
2. Classic symptoms of DM
   +
   Fasting blood glucose level ≥126 mg/dL (7.0 mmol/L)
   Fasting is defined as the condition when patients do not obtain extra calories for at least 8 hours
   Or
3. The 2 hours post loading plasma glucose ≥200 mg/dL (11.1 mmol/L)
   OGTT is performed according to WHO standard, using 75 g anhydrous glucose load which is dissolved into the water

ADA 2010 had also recommended using A1C ≥ 6.5% as part of diabetes diagnostic criteria. The diagnostic test should be performed using a method certified by the National Glycohemoglobin Standardization Program (NGSP) and standardized or traceable to the Diabetes Control and Complications Trial (DCCT) reference assay.

The preparation of OGTT is based on WHO guidelines (1994) as described below:

- Three days before the examination, the subject may keep his daily eating habits (with enough carbohydrates) and usual physical activities
- Fasting for at least 8 hours (starting the night) before the examination. Plain water may be allowed
- Collect blood sample for fasting blood glucose examination
- Give 75 grams of anhydrous glucose (adults), or 1.75 g/kg (children), dissolved in 250 mL of water and drink within 5 minutes
- Fasting for 2 hours after ingestion of glucose load.
- Collect blood sample for 2 hour post loading blood glucose examination
- During the OGTT procedure, the subject must remain at rest and must not smoke

Screening

Screening is conducted on those who have diabetes risks, but do not show any symptoms of DM. Screening seeks to capture undiagnosed DM or prediabetes so it can be managed earlier and more appropriately.

Mass screening is not recommended considering the costs, which are generally not followed by action plan for those who were found to have abnormal results.

Standard values of random blood glucose and fasting blood glucose for screening and diagnosis of DM can be seen in Table 3.

Table 3. Standard values of random blood glucose and fasting blood glucose for screening and diagnosis of DM (mg/dL)

		Non DM	Uncertain DM	DM
Random blood glucose level (mg/dL)	Venous plasma	<100	100 – 199	≥200
Fasting blood glucose level (mg/dL)	Venous plasma	<100	100 – 125	≥126

Notes: For high-risk groups which show no abnormal results, the test should be done every year. For those aged > 45 years without other risk factors, screening can be done every 3 years. The diagnostic procedure for DM can be seen in Figure 1.

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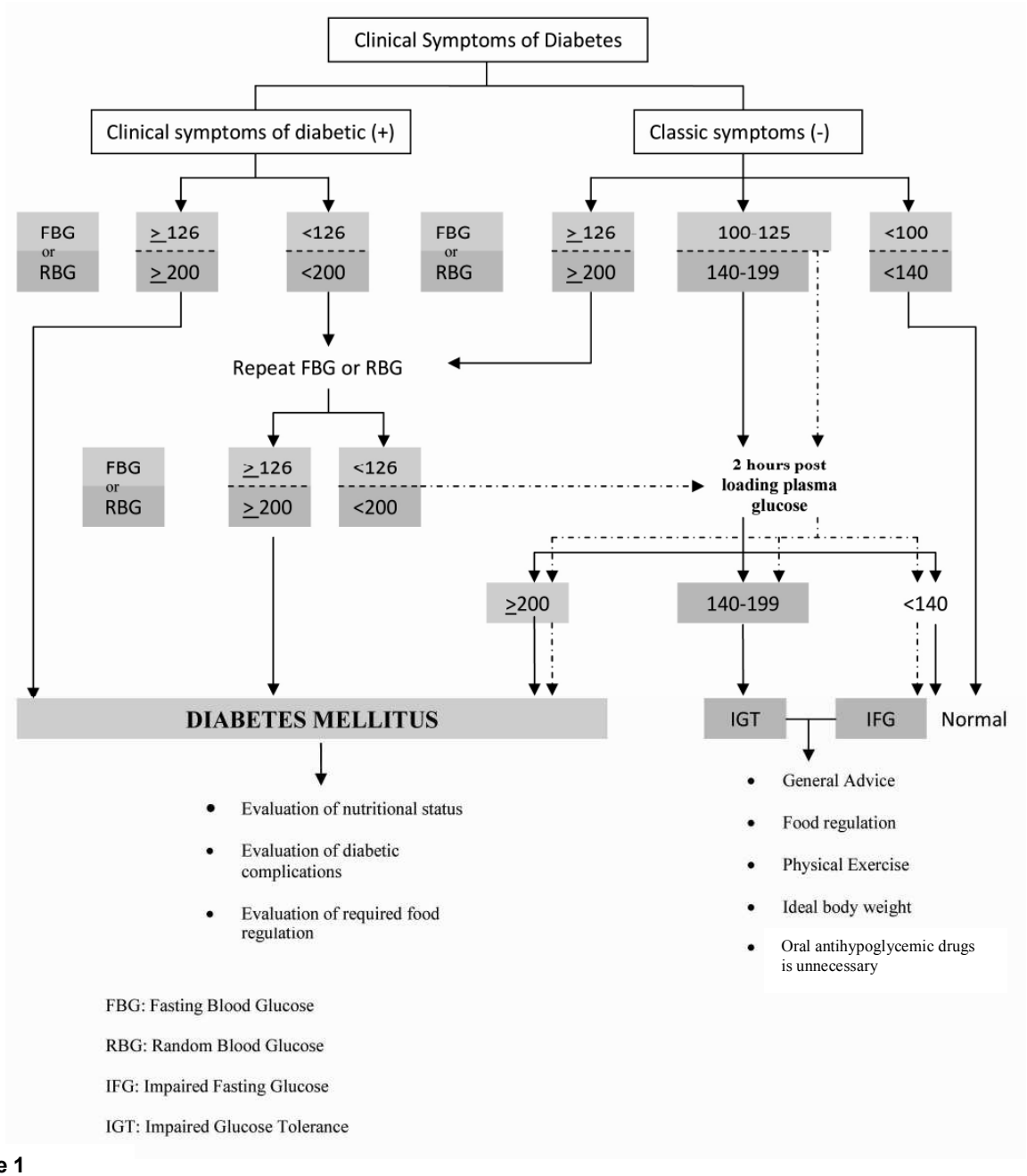

Figure 1

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