

Revised SEMDSA Guidelines for diagnosis and management of type 2 diabetes mellitus for primary health care in 2002.

CRITERIA FOR THE DIAGNOSIS OF DIABETES MELLITUS

Symptoms of diabetes **plus**:
 casual plasma glucose concentration ≥ 11.1 mmol/l. ¹
OR
 Fasting plasma glucose ≥ 7.0 mmol/l.²
OR
 2-h PG ≥ 11.1 mmol/l during an OGTT.³

1. Casual is defined as any time of day without regard to time since last meal. The classic symptoms of diabetes include polyuria, polydipsia and unexplained weight loss.
2. Fasting is defined as no caloric intake for at least 8 hours.
3. The test should be performed as described by the World Health Organization, using a glucose load containing the equivalent of 75-g anhydrous glucose dissolved in water.

Note: In the absence of unequivocal hyperglycemia with acute metabolic decompensation, these criteria **should be confirmed by repeat testing** on a different day. The oral glucose tolerance test (OGTT) is not recommended for routine clinical use but as many as 30% of people with diabetes will not be diagnosed if only fasting measurements are done. Different criteria are used to diagnose gestational diabetes in pregnant women.

RECOMMENDATIONS FOR GLYCAEMIC CONTROL*

Biochemical Index	Optimal	Acceptable	Additional Action Suggested ¹
Capillary blood glucose values (finger-prick)²			
Fasting (mmol/l)	4-6	6-8	> 8
2-hour post-prandial (mmol/l)	4-8	8-10	> 10
Glycated hemoglobin (HbA_{1c}) (%)	< 7	7-8	> 8
Weight			
BMI (kg/m ²)	< 25		> 27 ³
Waist circumference (cm): Male	< 94		>102
Female	< 82		>88

*These values are for nonpregnant adults.

1. "Additional action suggested" depends on individual patient circumstances. Such actions may include enhanced diabetes self-management education, co-management with a diabetes team, referral to an endocrinologist/diabetologist, change in pharmacological therapy, initiation or increased self-monitoring of blood glucose, or more frequent contact with the patient. HbA_{1c} is referenced to a nondiabetic range of 4.0 – 6.0%. Note that often action should ideally be instituted before these levels are reached.
2. Preferably assessed over several visits.
3. In the presence of diabetes mellitus (DM) this level is 27 and not 30.

LIPID AND BLOOD PRESSURE GOALS (For nonpregnant adults)	
Blood Pressure (mmHg)	Lipids (mmol/l)
Systolic < 130 Diastolic < 80	Total-cholesterol < 5.0 LDL-cholesterol ≤ 3.0 ¹ HDL-cholesterol > 1.2 Triglycerides < 1.5
<u>If persistent dipstick proteinuria (macroalbuminuria)</u>	
Systolic < 120 Diastolic < 70	

1. American National Cholesterol Education Program (NCEP) III recommends a level of < 2.6 mmol/l, especially in the presence of existing vascular disease (stroke, peripheral vascular disease, and ischaemic heart disease).

KEY TESTS / EXAMS (all initially)	
Test / Exam	Frequency
Glycated hemoglobin	<ul style="list-style-type: none"> Quarterly if treatment changes or not meeting goals At least 2 times/year if stable
Dilated eye exam	Yearly
Comprehensive foot exam	At least yearly (more often in patients with high-risk foot conditions)
Lipid profile	Yearly (less frequently if normal)
Serum creatinine level	Yearly
Microalbumin measurement	Yearly if no persistent dipstick proteinuria (macroalbuminuria)
Blood pressure	Each regular diabetes visit
BMI (body mass index) & waist circumference	Initially and weigh at each regular diabetes visit
ECG	Yearly if possible

Patient education and nutritional counseling

This is the cornerstone of effective diabetes care and sufficient time and resources should be made available in order to do this effectively. As obesity virtually always accompanies type 2 diabetes it should be targeted in its own right. A weight loss of 5-10% should be the initial aim and as such has been shown to improve insulin resistance and all its associated parameters. Evidence demonstrates that structured, intensive lifestyle programs involving participant education, individualized counseling, reduced dietary fat and energy intake, regular physical activity and frequent participant contact are necessary to produce long-term weight loss of >5% of starting weight.

Glucose Treatment Recommendations for type 2 DM.

1. Always provide or refer for dietary and lifestyle advice at diagnosis and regularly (as often as possible, at least annually) thereafter.
2. If random glucose values > 15 mmol/L consider starting oral agents together with lifestyle modification from the start.
3. If overweight (BMI > 25) consider metformin unless contra-indicated.
4. If postprandial glucose values constitute the major abnormality or sulphonylureas contra-indicated (e.g. renal failure) acarbose or meglitinides may be considered.
5. If insulin resistance is the major abnormality (abdominal obesity [see waist circumference above], lowered HDL, raised triglycerides, hypertension) metformin should be considered as first line or add on therapy. If metformin contra-indicated or poorly tolerated (e.g. raised serum creatinine or major cardio-pulmonary) then thiazolidinediones may be used.
6. Always start with monotherapy and titrate dosage to maximum over 1-3 months.
7. If goals still not reached then add second agent (lowest dose, titrate when necessary).
8. If goals still not attained despite good compliance and absence of major stressors such as infection consider insulin therapy.
9. In such cases insulin therapy may be initiated as intermediate or long acting insulin at bedtime (titrate against pre-breakfast reading) with or without oral agents. If possible self glucose monitoring should be done in all patients on insulin.
10. Initial insulin dose is 0.2-0.3 U/kg.
11. If more than 30 U per day are required or clinical judgment indicates, use twice daily biphasic insulin (2/3 intermediate, 1/3 short acting). Consider referral.

Blood pressure treatment recommendations.

1. If possible and affordable therapy should be angiotensin converting enzyme (ACE) inhibitor based.
2. Low dose diuretics (eg. hydrochlorothiazide (HCTZ) 12.5mg or Indapamide 1.25 -2.5 mg/day) may be appropriate first line agents in black patients and second line agents in others.
3. Many, if not most, patients will require at least 2 agents to control blood pressure.
4. In the presence of micro- or macroalbuminuria ACE inhibitors or angiotensin II receptor antagonists are of proven benefit.
5. In patients over age 55 yrs with hypertension (HT), or without HT but with another cardiovascular risk factor (history of coronary vascular disease, dyslipidaemia, microalbuminuria, smoking) an ACE inhibitor (if not contra-indicated) should be considered to reduce the risk of cardiovascular events.

Aspirin recommendations.

Use aspirin therapy as a secondary prevention strategy in individuals who have evidence of large vessel disease (a history of myocardial infarction, vascular bypass procedure, stroke or transient ischaemic attack, peripheral vascular disease, claudication, and/or angina).

In addition to treating the primary cardiovascular risk factor(s) identified, consider aspirin therapy as a primary prevention strategy in high-risk men and women with type 1 or type 2 diabetes. This includes diabetic subjects with the following: a family history of coronary heart disease, cigarette smoking, hypertension, obesity, albuminuria (micro or macro), age >30 years or dyslipidaemia.

Use of aspirin has not been studied in diabetic individuals under the age of 30 years.

1. Use 150-300 mg aspirin per day (enteric coated if possible).
2. People with aspirin allergy, bleeding tendency, anticoagulant therapy, recent gastrointestinal bleeding, and clinically active hepatic disease are not candidates for aspirin therapy.
3. Aspirin therapy should not be recommended for patients under the age of 21 years because of the increased risk of Reye's syndrome associated with aspirin use in this population.

Lipid treatment recommendations.

1. If LDL-cholesterol persists above 3 mmol/l refer for dietary advice. If despite adequate glycaemic control and dietary advice, LDL-cholesterol remains above 3 mmol/l consider a statin as therapy.
2. If triglycerides are above 1.5 mmol/l check for secondary causes such as poor glucose control, alcohol, thyroid disease etc. and if negative refer for dietary advice. If remains persistently high (> 4mmol/l) consider using a fibrate (especially if the HDL-cholesterol is < 0.9 mmol/l).
3. If both the LDL-cholesterol and triglycerides remain elevated following dietary advice initiate therapy with a statin. Consider adding a fibrate if raised triglycerides persist despite statin therapy but beware of drug induced rhabdomyolysis.
4. Fibrates should be used with extreme caution in patients with impaired renal function. In these patients if statins are used they should be started at low doses and doses subsequently titrated as needed. Hyperlipidemia in this setting should preferably not be managed at a primary care level.

Reference:

ADA Clinical Practice Recommendations 2002. Diabetes Care 2002; vol 25: nr 1: supplement1