

# SEMDSA Guidelines for Diagnosis and Management of Type 2 Diabetes Mellitus for Primary Health Care – 2009

## CRITERIA FOR DIAGNOSIS OF DIABETES MELLITUS

### Symptoms of diabetes plus

- Casual/random plasma glucose  $\geq 11.1$  mmol/l  
or
- Fasting plasma glucose (FPG)  $\geq 7.0$  mmol/l  
or
- 2 hr plasma glucose (2PG)  $\geq 11.1$  mmol/l during OGTT

### If asymptomatic

- Do FPG on 2 separate days (or OGTT)

Different criteria are used to diagnose gestational diabetes in pregnant women.

## GLYCAEMIC TARGETS FOR CONTROL<sup>a</sup>

Glycated haemoglobin (HbA<sub>1c</sub>) (%)<sup>b</sup> < 7

Capillary (finger-prick) plasma glucose (mmol/l):  
Pre-prandial 4 – 7  
Post-prandial 5 – 8

- <sup>a</sup>for non-pregnant adults, <sup>b</sup>referenced to non diabetic range of 4-6% using a DCCT-aligned assay
- HbA<sub>1c</sub> is the primary target for glycaemic control.
- More stringent glycaemic goals (i.e. HbA<sub>1c</sub> < 6.5%) may further lower the risk of microvascular complications viz. nephropathy, but at the cost of increased risk of hypoglycaemia
- Goals should be individualized based on: duration of diabetes, comorbid conditions, pregnancy status, hypoglycaemia unawareness, age, individual patient considerations

## BMI, WAIST, LIPID AND BLOOD PRESSURE GOALS

### BMI

- BMI < 25 kg/m<sup>2</sup>
- Waist < 94 cm men\*\*
- Waist < 80 cm women

### BLOOD PRESSURE<sup>++</sup>

- Systolic < 130 mmHg
- Diastolic < 80 mmHg

### CHOLESTEROL

- Total-cholesterol < 4.5 mmol/l
- LDL-cholesterol < 2.5 mmol/l +
- HDL-cholesterol > 1.0 mmol/l (men)  
> 1.2 mmol/l (women)
- Triglycerides < 1.7 mmol/l

+ In the presence of clinically manifest vascular disease (ischaemic heart disease, cerebrovascular disease or peripheral vascular disease) the target should be a LDL-cholesterol <1.8mmol/l

++ The target blood pressure in diabetic nephropathy is systolic  $\leq 120$  mmHg and diastolic  $\leq 70$  mmHg

\*\* <90 cm in men of South Asian descent

## KEY PROCESSES OF CARE (ALL INITIALLY)

Tests / procedures	Frequency
HbA <sub>1c</sub>	At least 2 times/year if stable Quarterly if treatment changes or not meeting goals.
Lipid Profile	Annually, or more frequently if lipids are high and after treatment has been initiated.
Blood Pressure	Measure at every routine diabetes visit.
Weight/BMI/Waist	Weigh and measure waist at each regular diabetes visit. BMI annually.
Comprehensive Foot Examination	Annually, or more often in patients with high-risk foot conditions.
Microalbumin*	Annually if no persistent dipstick proteinuria.
Serum creatinine	Annually.
Eye examination for retinopathy	Annual or more frequently if significant retinopathy present.
Referral to diabetes nurse educator and/or dietician	Annually.

\* If Microalbumin is not available, check for proteinuria

## PATIENT EDUCATION

Patient education is the cornerstone of effective diabetes care and aim is to promote patient self-management.

## CHILDREN

Type 2 diabetes does occur in children with increasing frequency and is becoming a problem. All children should be referred for specialist assessment.

## LIFESTYLE

- Weight loss is recommended for all overweight (BMI 25 – 29.9kg/m<sup>2</sup>) or obese (BMI  $\geq 30$  kg/m<sup>2</sup>) individuals who have diabetes.
- It is important to set a weight-loss goal that is achievable and can be maintained (weight-loss of 5 – 10%) body weight can produce significant health benefits.
- Regular physical activity helps to maintain weight loss and prevent weight regain.
- 30-45 min of moderate-intensity aerobic physical activity (3-5 days per week initially, gradually increasing the duration and frequency) is recommended.

## GLYCAEMIC TREATMENT RECOMMENDATIONS

- Insulin therapy may be necessary at diagnosis (e.g. if fasting glucose > 14mmol, HbA<sub>1c</sub> >10%, presence of severe symptoms and weight loss or ketonuria).
- Basal insulin includes NPH and Lente insulin. If nocturnal hypoglycaemia is problematic then glargine or detemir insulin should be used.
- Specialist referral is appropriate at any stage if glycaemic targets remain unmet.
- Newer and more expensive agents are not considered appropriate at primary care level.
- For more details on pharmacological therapy, please consult the SEMDSA home page at [www.semDSA.org.za](http://www.semDSA.org.za)

## Glycaemic Management of Type 2 Diabetes in Non-Pregnant Adults

### Step 1

#### AT DIAGNOSIS: LIFESTYLE MODIFICATION + METFORMIN

Initiate metformin at diagnosis and titrate dose up to 2550mg over 1 – 2 months

HbA<sub>1c</sub> > 7% after ≥ 3 months or if metformin is contraindicated

### Step 2a

#### ADD SULPHONYLUREA

- Especially if HbA<sub>1c</sub> <8.5%
- Use Glibenclamide only if serum creatinine is normal
- Titrate to maximum tolerated dose over 3 months

OR

#### ADD BASAL INSULIN

- Especially if HbA<sub>1c</sub> >8.5%
- Start 10u at bedtime
- Titrate by 2u/week until fasting glucose ≤7.0mmol/l

OR

#### ADD PIOGLITAZONE

- Not preferred except under special circumstances.
- See text

HbA<sub>1c</sub> >7% after ≥ 3 months

### Step 2b

(optional)

#### ADD A 3<sup>rd</sup> DRUG FROM STEP 2

i.e. choose a 3<sup>rd</sup> as yet unused agent from STEP 2a

HbA<sub>1c</sub> >7% after ≥ 3 months

### Step 3

#### START BIPHASIC INSULIN

- When Intensive Insulin therapy is not feasible

#### REFER FOR INTENSIVE INSULIN THERAPY

i.e. basal + prandial insulin therapy

## BLOOD PRESSURE TREATMENT RECOMMENDATIONS

- Diagnosis of hypertension: BP > 130 mmHg systolic or > 80 mmHg diastolic on 2 separate days.
- Initiate lifestyle advice and drug therapy at outset.
- First line therapy: An angiotensin-converting enzyme (ACE) inhibitor (or angiotensin receptor blocker (ARB), if ACE intolerant). In Black patients low dose thiazide is preferable as initial monotherapy.
- Add low dose thiazide/loop diuretic (if estimated GFR < 50ml/min) if BP target is not achieved.
- Two or more agents are often required to achieve BP targets.
- Avoid combinations of an ACE-inhibitor and an ARB or of either one of these and spironolactone as potassium levels may rise.
- Monitor serum potassium and creatinine in all patients, particularly if ACE-inhibitors, diuretics or ARBs are prescribed.
- In the presence of microalbuminuria or macroalbuminuria it is mandatory to use an ACE-inhibitor (or ARB if intolerant to ACE-inhibitor).
- Beta blockers are only indicated if there is co-existing angina, in patients with a previous myocardial infarct or if hypertension is refractory to a combination of other classes.

## LIPID TREATMENT RECOMMENDATIONS

- Achieving the recommended LDL-cholesterol level is the primary goal of therapy.
- Statins are first line agents for lowering LDL-cholesterol in diabetic patients. (The addition of a fibrate or another lipid-modifying drug may be considered if triglycerides remain > 2 mmol/l after reaching LDL-cholesterol target with statins. However, these patients should be referred for specialist assessment).
- Statin therapy should be added to lifestyle therapy, regardless of baseline lipid levels, for all type 2 diabetic patients:
  - with existing cardiovascular disease.
  - older than 40 years of age and who have one or more additional cardiovascular risk factors.
- For diabetic patients at lower risk (without established cardiovascular disease or under 40 years of age) use a targeted approach. In these patients statin therapy should be considered if the LDL-cholesterol remain > 2.5 mmol/l despite adequate glycaemic control and advice on lifestyle.
- Refer if triglycerides > 5 mmol/l in the controlled diabetic, or > 15 mmol/l before treatment.

## ANTIPLATELET AGENTS

- Use aspirin therapy (150 mg/day) as a secondary prevention strategy in those with diabetes with a history of CVD and as primary prevention strategy in those with type 1 or 2 diabetes at increased cardiovascular risk, including those who are > 40 years of age or who have additional risk factors (family) history of CVD, hypertension, smoking, dyslipidaemia, or albuminuria.
- Aspirin therapy is not recommended in people under 30 years of age.
- Combination therapy with clopidogrel is reasonable for up to a year after an acute coronary syndrome or alone for patients with CVD and documented aspirin allergy.