



Government of West Bengal
State NCD Cell
Health & Family Welfare Department
National Health Mission
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Memo no. HFW-27024/50/2019-SPSRC SEC-Dept. of H&FW/150

Dt. 30/06/2025

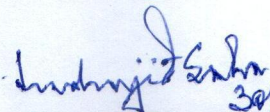
To,
The Principal & MSVP of all Medical Colleges & Teaching Institution
The Chief Medical Officer of Health of all Districts & Health District
Superintendents/BMOHs of all hospitals and health centres

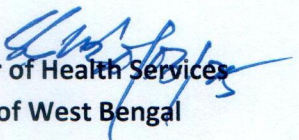
Madam/Sir,

Cardiovascular diseases (CVD) account for one third of the deaths in most Indian states. Uncontrolled high blood pressure is the major cause for heart attacks and stroke. India has 20 crore people with high blood pressure of which only 2 crores have blood pressure under control. West Bengal has 21% prevalence of Diabetes Mellitus (Type 2) and approximately 90 lakh adults with diabetes.

In an aim to achieve the goal of 25% relative reduction in the NCD mortality by 2025, state had already adopted a standard treatment protocol & guideline during 2019. Diabetes being a silent killer, controlling that with un-interrupted drug and lifestyle modification is a major challenge. In consideration of newer drugs and specific conditions e.g. gestational diabetes etc. some evidenced based changes have now been implemented in the previous protocol to archive 50~75% control of patients suffering from Type 2 diabetes.

THUS, A REVISED STATE SPECIFIC STANDARD TREATMENT PROTOCOL & GUIDELINE FOR TYPE II DIABETES MELLITUS is hereby prepared (Annexed) by the state technical committee and medical teachers of West Bengal, considering evidenced based safety, efficacy, and cost benefit issues. Strict adherence of the protocol is desirable for put on treatment of all new diabetes patients until complication and other co-morbid situation arises (also included in protocol) in life saving condition.


30/6/25
Director of Medical Education
Govt. of West Bengal


Director of Health Services
Govt. of West Bengal



Government of West Bengal, Department of Health & F.W

Management Protocol for Type 2 Diabetes

- Screening of Diabetes (RBS, FBS, PPBS)

- ✓ Age ≥ 30 years
- ✓ BMI ≥ 23 kg/m²
- ✓ H/O Prediabetes (annually)
- ✓ H/O GDM (every 3 years)
- ✓ Symptoms of DM: polyuria, polydipsia, polyphagia, unexplained weight loss
- ✓ Any other NCD

Life-style modifications

- ✓ Avoid tobacco and alcohol.
- ✓ Exercise regularly 150 minutes per week.
- ✓ If overweight/ obese, lose weight.
- ✓ Diet- decrease quantity of cereals by 25%, encourage fruits and vegetables.
- ✓ Eat less than one teaspoon of salt per day.
- ✓ Reduce fat intake by changing how you cook – remove fatty part of meat, boil, limit reuse of oil for frying.
- ✓ Avoid packed and stored foods.
- ✓ Avoid excess sugar, carbonated/ packaged drinks.

- If RBS > 140 mg/dl or, FBS > 126 mg/dl or, PPBS > 200 mg/dl – Initiate treatment as follows:

Step 1

If Initial FPG 200-250mg/dl or PPPG 300-350mg/dl, consider starting dual drug therapy (Metformin + Dapagliflozin)

- **Start T. Metformin 500 mg OD or BD**
- (Monitor FPG/ PPPG monthly. Review in 1 month, if FPG/ PPBG values are high)

Step 2

- Along with LSM (up titrate to maximally tolerated G.I side effects)
- **Intensify T. Metformin 1000 mg BD**
- Review in 1 month, if FPG/ PPBG values are high

Step 3

- ** Avoid if Diabetic Ketoacidosis, active or recurrent genitourinary infection, severe dehydration, End stage renal disease and history of hypersensitivity*
- **Add T. Dapagliflozin 10 mg OD***
- **(if C/I then use T Linagliptin 5 mg OD)[§]**
- Along with LSM, T. Metformin 1000 mg BID

Step 4

- **Add T Glimipiride 1 mg OD or BD**
- If required, intensify up to 4 mg BD

Step 5

- **Add T Pioglitazone 15 mg OD or,**
- **T Voglibose 0.3 mg with meals OD (upto TDS)**

Glycaemic Goals for most patients:

- Pre Prandial Plasma Glucose- 80-130 mg/dl
- 2 hour Post Prandial Plasma Glucose- <140-150 mg/ dl
- HbA1c- <7% (to be checked at least twice a year)

Screen for co-morbidities and/or complications: (at least annually):

1. **Hypertension** - Blood pressure (preferably every visit)
2. **Dyslipidaemia** - Fasting lipid profile
3. **Cardiovascular disorders** - ECG
4. **Retinopathy** - Dilated Fundus examination
5. **Nephropathy** - Serum creatinine (eGFR), urinary albumin: creatinine ratio
6. **Neuropathy** - 10 g MFT, VPT, Pin prick
7. **Peripheral arterial disease** - Distal pulses \pm ABI (Ankle Brachial Index)

Hypoglycaemia:

- ✚ **Symptoms:** Cold sweat, trembling of hands, hunger, palpitation, confusion.
- ✚ **Treatment:** Give 15 gm of glucose or consume complex carbohydrate (starchy food). Recheck blood glucose after 15 minutes and repeat if hypoglycaemia continues. Give IV dextrose if altered sensorium
- ✚ **Review:** Current anti-diabetic medication.

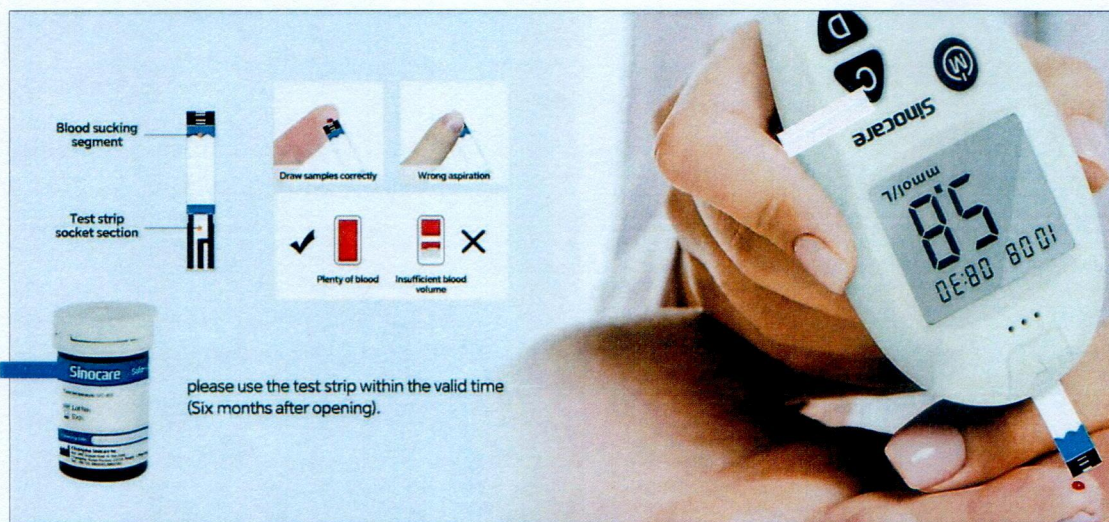
If plasma glucose is under control by any of these steps and no complications are identified, same treatment should be continued. Follow-up should be done every 1-3 monthly based on FBG and 2-hour PPBG

If initial FPG > 250mg/dl or PPPG > 350 mg/dl, HbA1c > 10 % especially with severe osmotic symptoms or co-existent infection or presence of any complications or uncontrolled glucose with three drug therapy consider referring to Higher Centre for consideration of insulin initiation

For Gestational DM – see guideline/ § - Teneligliptin may be used in absence of Linagliptin

Standard Operating Procedure of Random Blood Sugar measurement using Strip method

1. **Prepare the Glucostrip:** Ensure the Glucostrip is within its expiry date and is stored correctly. Remove a strip from the container just before use.
2. **Prepare the Patient and Equipment:**
 - o Ensure the patient's hands are clean and dry.
 - o Prepare the lancet device for a fingerstick blood sample.
3. **Perform Fingerstick:**
 - o Clean the patient's fingertip with an alcohol swab and allow it to air dry.
 - o Use the lancet to obtain a small drop of blood.
4. **Apply Blood to Glucostrip:**
 - o Touch the edge of the Glucostrip to the blood drop until the strip is completely filled with blood. Ensure the blood is drawn into the strip's channel.
5. **Wait for Results:** Follow the manufacturer's instructions for the specific Glucostrip used. Typically, the meter will display the blood glucose level after a few seconds.
6. **Dispose of Lancet and Used Glucostrip Safely:** Place used lancets and Glucostrips in appropriate biohazard disposal containers according to local regulations.
7. **Document and Report:** Record the blood glucose measurement in the patient's medical records promptly.



Criteria for Diagnosis of Diabetes*

	Prediabetes	Diabetes
Fasting plasma glucose	100-125 mg/dl (IFG)	≥ 126 mg/dl
2hr post 75 gm Glucose load plasma glucose	140-199 mg/dl (IGT)	≥ 200 mg/dl
HbA1c	5.7-6.4 %	≥ 6.5 %
Random plasma glucose		≥ 200 mg/dl **

IFG – Impaired Fasting Glucose; IGT – Impaired Glucose Tolerance

*If asymptomatic, single abnormal test report needs reconfirmation as soon as possible

**Only diagnostic in a patient with classic symptoms of hyperglycemia or hyperglycemic crisis (polyuria, polydipsia, unexplained weight loss)

GUIDELINES FOR MANAGEMENT OF TYPE 2 DIABETES MELLITUS IN PRIMARY CARE SETTING

I. SCREENING FOR TYPE 2 DIABETES MELLITUS

<u>Whom to screen? (in absence of symptoms)</u>
<ol style="list-style-type: none"> 1. Age ≥30 years, in absence of risk factors 2. All overweight or obese adults (BMI ≥23 kg/m²), with one or more risk factors (first degree relatives with T2D, H/O CVD, HTN, Dyslipidemia [HDL <35 mg/dl, TG >250 mg/dl]), PCOS In case of children older than 10 years: BMI>85th centile with one risk factor (Maternal H/O GDM, family H/O T2D, dyslipidemia, HTN, PCOS) 3. Patients with prediabetes (A1C ≥5.7%, IGT, or IFG) should be tested yearly 4. Women who were diagnosed with GDM should have lifelong testing every 1-3 years
If results are normal, testing should be repeated at a minimum of 3-year intervals , with consideration of more frequent testing depending on initial results and risk status

IGT – Impaired Glucose Tolerance; IFG – Impaired Fasting Glucose

II. PRINCIPLES OF THERAPY-

Alleviate symptoms, prevent acute and chronic complications, improve quality of life

1. Screen for comorbidities

What to screen for?	How to screen?	Frequency
Hypertension	Blood pressure	Every follow up visit
Dyslipidemia	Fasting lipid profile (preferably after glycemic control)	Annually
Cardiovascular	ECG	Annually
Retinopathy	Dilated Fundus examination/ Fundus photography	Annually
Nephropathy	Serum creatinine (calculate eGFR) Urinary albumin (spot urinary albumin-to creatinine ratio) {after glycemic control}	Annually
Neuropathy	<ol style="list-style-type: none"> i. Pinprick sensation ii. 10-g monofilament iii. Vibration perception threshold 	Annually
Peripheral arterial disease	Distal pulses ± ABI*	Annually
MASLD	FIB4 (Age, SGPT, SGOT, Platelet count)	Annually
Vit B12	If on Metformin for more than 5 years	Annually
Psychosocial	Assessment of depression, anxiety, diabetes distress	Annually

* ABI: Ankle Brachial (systolic BP) Index, After age of 50 years or, with risk factors like CAD

2. Lifestyle changes

Nutrition	<ul style="list-style-type: none"> ✓ Calorie restriction (if BMI is increased) ✓ Balanced diet ✓ Adequate fruits & vegetables ✓ Avoid deep fried foods, soft drinks, processed foods
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Physical activity	✓ 150 min/week moderate exertion, spread over at least 3 days/week, with no more than 2 consecutive days without activity ± Resistance exercise ± Balanced exercise for elderly
Sleep	✓ About 7 hours per night
Tobacco avoidance	✓ No tobacco products
Moderation of alcohol intake	✓ No more than 1 drink per day for adult women and no more than 2 drinks per day for adult men

3. Pharmacological therapy

Whom to treat?

- ✓ All patients with diabetes not responding to lifestyle therapy for a period of 3 months should be started on pharmacological therapy
- ✓ If initial HbA1c \geq 7.5%, pharmacological treatment should be started along with lifestyle changes

Which drug to choose?

i. Oral antidiabetic drugs

1st line agent

Metformin is recommended as the first line treatment for all patients with type 2 diabetes mellitus unless not tolerated or contraindicated (eGFR $<$ 30ml/min/1.73m²), lactic acidosis, any acute illness or, hypoxaemic states

2nd line agent

- ❖ Add **Dapagliflozin** to metformin if blood glucose is not controlled with Metformin alone
- ❖ Avoid Dapagliflozin if active/recurrent genitourinary infections, ketoacidosis, severe dehydration, documented end stage renal disease or, on hemodialysis
- ❖ If Dapagliflozin is contraindicated, start **Linagliptin**

3rd line agent (to be decided by specialist)

DRUG	INDICATIONS	CAUTION
Linagliptin	If not already added	History of acute pancreatitis, hypersensitivity on previous exposure
Dapagliflozin	If not already added	Recurrent genitourinary tract infection, H/O upper urinary tract infections, severe dehydration, severely insulinopenic

4th line agents:

- ✓ **Glimepiride:** 1 mg OD or, BD (Intensify up to 4 mg BD)
 - Risk of hypoglycemia, weight gain
 Other agents if needed:
- ✓ **Pioglitazone** 15 mg OD (Caution in heart failure, oedema)
- ✓ **Voglibose** 0.3 mg OD with meals up to three times a day (GI side effects)

Doses of Oral Anti-hyperglycemic agents:

Drug	Initial dose	Maximum dose	Frequency of dose
Metformin	500mg to 1 gm	2.5 gm	o.d., bid, tid (depending on preparation and total dose)
Sulphonylureas Glimepiride	1 to 4 mg	8mg	O.D., B.I.D
Linagliptin	5 mg	5 mg	OD
AGI Voglibose	0.2mg with each meal	0.3mg with each meal	With meals
Pioglitazone	15mg	30mg	OD
Dapagliflozin	5-10mg	10mg	OD

ii. Insulin (Specialist initiation)

Indications of insulin?

1. **Catabolic state / Uncontrolled hyperglycemia**
 2. **Preconception & Pregnancy**
 3. **Major surgery / Acute metabolic / infective complications**
- ✓ **Consider insulin if at the time of diagnosis, patient is symptomatic and have one of the following: Fasting plasma glucose > 250mg/dl or Postprandial glucose > 300mg/dl or HbA1c >10%**
 - ✓ **Insulin can be considered at any stage in type 2 diabetes mellitus. However, it is recommended to consider insulin after failure of 3 oral antidiabetic drugs**

Which insulin to initiate?

- ✓ If fasting blood glucose is predominantly raised – consider Basal insulin
- ✓ If postprandial blood glucose is predominantly raised – consider premixed insulin or, basal-bolus regimen
- ✓ Human insulins are generally preferred over analog insulins, especially because of price advantage
- ✓ Rapid acting analogs may be preferred in sick patients with unreliable food intake
- ✓ Long acting analogs may be preferred in patients particularly experiencing recurrent nocturnal hypoglycemia
- ✓ *SMBG (Self Monitoring of Blood Glucose) to be strongly encouraged, whenever insulin is initiated*

How to initiate insulin?

- Basal insulin: 0.1 -0.2 units/ kg/ day or, 10Units/day; generally at a fixed time at night. Titrate every 3rd day (after monitoring fasting glucose) to achieve glycaemic targets
- Pre-mixed insulin: 0.4-0.5 units/ kg/ day; administer 2/3rd of the total daily dose with morning meal and 1/3rd with evening meal ; analogue pre-mixed insulin to be injected within 10 min of onset of meal, while human pre-mixed insulin needs to be injected about 30 min pre-meal

- For Basal bolus: 50% dose as basal, rest 50% in three divided doses as prandial insulin

III. TREATMENT GOALS

Glycemic goals for most patients	
Pre prandial plasma glucose	80-130 mg/dl
2hr postprandial plasma glucose*	<140-150 mg/dl
HbA1c	< 7%

*Postprandial glucose measurements should be made 2 h after the beginning of the usual meal (and not glucose load). Usual medicines should also be taken.

Nonglycemic goals			
Blood pressure			
Higher cardiovascular or, renal risk	< 130/80mmHg		
Lower cardiovascular risk	< 140/90mmHg		
Lipids			
	High risk*	Very high risk**	Extremely high risk***
LDL-C (mg/dL)	< 100	< 70	<55
Non HDL-C (mg/dL)	< 130	< 100	<80
TG (mg/dL)	< 150	< 150	< 150
Antiplatelet agents			
Use aspirin as secondary prevention strategy (75-150 mg/day)			
Clopidogrel for those with aspirin allergy/intolerance			
Aspirin for primary prevention: only in those with very high risk, after discussion with patient regarding possible benefits vs risks of bleeding			

*High risk: DM but no other major risk and/or age <40 years; **Very high: DM + major Atherosclerotic Cardiovascular risks (ASCVD) risk(s) (HTN, Family History of ASCVD, low HDL-C, smoking, CKD stage 3,4) ; ***Extremely high risk: DM plus established clinical CVD

FOLLOW UP

	Baseline	Follow up
Physical examination		
Height, weight and BMI (try to achieve ideal body weight)	✓	Every visit
Blood pressure	✓	Every visit
Fundoscopy examination (refer to eye specialist)	✓	Every year if no retinopathy
Skin examination (e.g., insulin injection sites, lipodystrophy)	✓	Every visit
Comprehensive Foot examination	✓	Atleast annually
➤ Visual inspection (e.g., skin integrity, callus formation, foot deformity or ulcer, toenails)		

<ul style="list-style-type: none"> ➤ Determination of pinprick sensation, 10g monofilament examination, vibration perception and temperature sensation ➤ Screen for Peripheral Arterial Disease – pedal pulses (Age >50 years or, with risk factors like CAD) 		
Investigations		
Fasting and 2-hour postprandial glucose	✓	At least every 3months
HbA1c	✓	At least 6 monthly
Fasting lipid profile	✓	At least annually
Serum creatinine & eGFR	✓	Atleast annually; if favorable profile, every 2-3 years
Urinalysis (including microscopy and urine microalbumin screening)	✓	At least annually
Liver function tests, platelet count	✓	At least annually
ECG	✓	Annually

IV. REFERRAL CRITERIA

<p>Referral criteria</p> <ol style="list-style-type: none"> 1. Diabetes in young (<25 years) 2. Where the type of diabetes is in question 3. Diabetes associated with significant comorbidities 4. In the presence of acute metabolic complications of diabetes 5. Uncontrolled hyperglycemia even after following standard treatment care 6. Chronic complications of diabetes demanding specialized care 7. Diabetes with severe infections and/or foot ulcers 8. Morbid obesity 9. Initiation of insulin (vide indications above)

Special Situation: Gestational diabetes

Pre pregnancy counselling:

- Universal screening of all women of reproductive age group, planning pregnancy for hyperglycemia
- Effective contraception until glycemic status, HTN, weight optimized
- Comprehensive nutrition assessment (meal planning, correction of dietary nutritional deficiency), regular moderate exercise, adequate sleep
- Encourage weight loss in individuals with overweight
- Comorbidity screening in women with preexisting diabetes (retinopathy screening, lipid profile, TSH, ECG, serum creatinine and urine ACR)
- Switch to insulin and stop all OHA (except metformin)
- ACEi/ ARB/ Statins should be stopped prior to conception

Diagnosis and management:

- Universal screening for all pregnant women with one step 2 hours OGTT with 75 g anhydrous glucose (irrespective of fasting or, non-fasting state) at 1st antenatal contact (preferably in first trimester)
- If first test is negative, then repeat test to be done at 24-28 weeks of gestation
- 2 hours OGTT cut off 140 mg/dl is taken as diagnostic of GDM
- If prepregnancy glycemic status is not documented, screen all pregnant women with FBG, PPBG, HbA1c at first visit
- Start lifestyle modification after diagnosis of GDM is established
- Follow up with FBG, PPBG after 2 weeks
- If treatment goal (Table 1) not achieved, start insulin

Table 1: Treatment Goals	
Value	Target (mg/dl)
FPG	< 95
2 hr PPPG	< 120

Insulin:

- Premixed insulin (30:70) S/C 30 minutes once a day before breakfast
- If FBG is above target level, also start pre dinner insulin
- 120-160 mg/dl: 4 units
- 160-200 mg/dl: 6 units
- >200 mg/dl: 8 units

Monitor with FBG and 2 hours PPBG every 3rd day

Insulin dose adjustments:

FBG	PPBG	Insulin dose
<95 mg/dl	<120 mg/dl	Continue previous dose
<95 mg/dl	>120 mg/dl	Increase pre breakfast dose by 2 units
>95 mg/dl	<120 mg/dl	Increase pre dinner dose, continue same dose pre breakfast
>95 mg/dl	>120 mg/dl	Increase 2 units pre dinner dose, increase pre breakfast dose by 2 units

Referral criteria:

1. Vomiting and not able to take food orally
2. Fasting blood glucose >200 mg/dl or, PPBG >250 mg/dl with or, without metformin or, insulin treatment
3. Total daily dose of insulin exceeds 20 units
4. Frequent hypoglycaemic episodes more than once a day

Encourage regular SMBG/ glycemic monitoring**Metformin:**

- Can be considered after 20 weeks of pregnancy (maximum dose 2gm/day) after discussing risk vs benefits with patient
- Metformin not to be used in presence of HTN, preeclampsia
- If not controlled with MFN, add Insulin (if not started earlier)

Antenatal Care:

- Fetal anomaly scan at 18-20 weeks and fetal growth scan at 28-30 weeks
- **Low dose Aspirin** (75 mg) starting at 12-16 weeks in high-risk cases of GDM (chronic hypertension or, an auto immune disease, or presence of multiple risk factors like nulliparous, obesity, age > 35years)
- **HTN-** To be monitored at each visit.
Blood pressure threshold of 140/90 mmHg for initiation or titration of antihypertensive therapy
- If antenatal dexamethasone injection is given for fetal lung maturation in case of early delivery, modify insulin dose according to cbg during this period

Complications screening:

Retinopathy: Retinal screening by fundoscopy needs to be done in each trimester and up to 1 year postpartum.

Nephropathy: Renal function at each trimester (creatinine, urine ACR)

Preeclampsia:

- BP, urine protein by dip stick at every antenatal visit (24 hours protein, if urine dipstick positive)
- Weekly BP and urine protein if suggestive of severe hypertension.
- Creat and electrolytes, LFT, CBC, coagulation profile, if suggestive of preeclampsia.

Rapid reduction of insulin requirement during pregnancy indicates fetoplacental insufficiency

Labour and delivery

- Induction of labour at or after 39 weeks if not delivered spontaneously
- LSCS for fetal macrosomia (>4 kg)
- To monitor CBG frequently
- Insulin infusion to be initiated according to CBG values

Blood glucose level (mg/dl)	Amount of insulin added in 500 ml NS	Rate of NS infusion (ml/hr)
120-140	4 Units	100
141-180	6 Units	100
>180	8 Units	100

Postpartum management

- Postpartum, insulin requirements will reduce significantly. Closely monitor the glycemic status and adjust therapy accordingly
- Initiate early breast feeding
- CBG monitoring of new born within first hour of birth and repeated 4 hourly up to 4 normal readings (risk of hypoglycemia)
- OGTT to be performed at 6 weeks postpartum and high risk of future diabetes in mother and offspring to be discussed
- If negative (2 hrs OGTT <140 mg/dl), then annual screening

All concerned are hereby informed.

Memo No. HFW-27024/50/2019-SPSRC SEC-Dept. of H&FW/1(6) /150

Date. 30/06/2025

Copy forwarded for information to:-

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