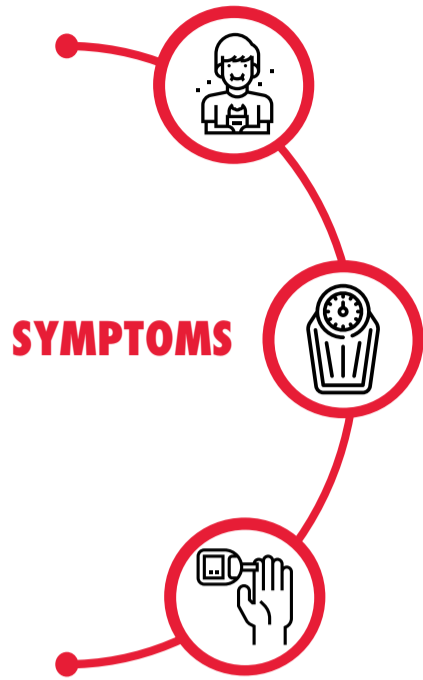




Standard Treatment Workflow (STW)

DIABETES MELLITUS TYPE 1

ICD-10-E10



Polydipsia

Polyuria / Nocturia

Polyphagia

Weight loss

Short duration of complaints

Diabetic ketoacidosis as first presentation

DIAGNOSIS

- Diagnosis of diabetes: Fasting plasma glucose ≥ 126 mg%; post-glucose ≥ 200 mg%; HbA1c $\geq 6.5\%$ (all to be re-confirmed); random glucose ≥ 200 mg% with symptoms
- Characteristic of T1 diabetes; urine/blood ketones: moderate-large (in $> 50\%$)
- Continuous requirement of insulin since diagnosis

INVESTIGATIONS

HbA1c, creatinine, hemoglobin, TSH, tTG (tissue transglutaminase) antibody, lipid profile

AMBULATORY MANAGEMENT

NUTRITION

- Calories should be appropriate to the expected body weight, pubertal status, activity
- Balanced diet including all food groups
- Simple sugars and excessive fats to be avoided
- Meals/snacks to be individualized and reflect insulin schedule (usually 3 meals, 2 snacks)

REGULAR EXERCISE

- Beneficial and should be encouraged

EDUCATION

- Emphasize diabetes related education to patient and caregivers

SMBG

- Check before each meal and at bedtime
- Should be checked more frequently in case A1c is not controlled, frequent hypoglycemia
- Glucose at midnight (12.00-2.00 am) occasionally to rule out nocturnal hypoglycemia
- Ketones should be checked if blood glucose is > 250 mg/dl

TARGET

- Pre-meal 80-130 mg%
- 2 hours post-meal: 120-180 mg%

INSULIN TREATMENT

Basal and bolus regimen

- Insulin administration (0.25 to 1.0U/kg depending on age and pubertal status)
- Basal: glargine or detemir or NPH 40-50% of daily requirement
 - Bolus: regular or rapid acting 50% of daily requirement/3 injections before each meal

Insulin doses can be adjusted depending upon

1. Pre-meal and post-meal glucose level
2. Carbohydrates in the meal
3. Exercise pattern

REASONS FOR REFERRAL TO HIGHER CENTRES

Uncontrolled hyperglycemia

For education of patient & family
For insulin injection techniques/
SBGM/ identifying hypoglycemia s/s

Recurrent hypoglycemia

Severe diabetic ketoacidosis
(altered sensorium, rapid breathing)

Chronic diabetes specific complications

MONITORING

AT EVERY VISIT

- Growth & pubertal development (for children and adolescents)
- Dietary and medication compliance
- BP, Weight monitoring
- Insulin site and injection technique
- Review SMBG record
- Hypoglycemia

EVERY THREE MONTHS

- Glycated hemoglobin (HbA1c)
- Target: $<7\%$ (should be individualized)

COMPLICATIONS & COMORBIDITIES (5 YEARS AFTER DIAGNOSIS, THEN ANNUALLY)

- Fundus examination (Retinopathy)
- Foot examination (Neuropathy)
- Urine albumin/creatinine ratio
- Other investigations (S-creatinine, TSH), lipid profile

SICK DAY RULES /DKA

IN CASE OF SICKNESS / INFECTION

- Measure glucose frequently, check for urine ketones if glucose >250 mg%
- Drink plenty of fluids, monitor urine output
- Eat small light meals 4-5 times/day
- In addition to usual insulin doses, take extra regular insulin s.c. every 6 hourly (10-15% of total daily insulin dose)
- If glucose not falling, excess vomiting, low urine output, high or rising ketone, admit the patient

DKA MANAGEMENT

- As per STW on Diabetic Ketoacidosis (DKA)

HYPOGLYCAEMIA

- **Symptoms and signs:** Sweating, hunger, tremors, irritability, weakness, drowsiness / seizures / unconsciousness (late stage)
- **Diagnosis:** Mild / moderate: glucose <70 mg% with or without symptoms
- **Severe hypoglycemia:** coma / seizures / inability to treat oneself
- **Treatment:** If glucose <70 mg% take 3 tsf glucose powder or sugar; if severe: caregiver should give inj. glucagon 1 mg s.c./ i.m. OTHERWISE IMMEDIATELY take to hospital for intravenous glucose injection (1-2 ml/kg of 25% dextrose)
- **Prevention:** Identify mismatch of food, exercise, insulin

ABBREVIATIONS

BP: Blood pressure
DKA: Diabetic ketoacidosis

SBMG: Self-monitoring of blood glucose
TSH: Thyroid-stimulating hormone
tTG: Tissue transglutaminase

REFERENCES

1. American Diabetes Association; Standards of Medical Care in Diabetes—2022 Abridged for Primary Care Providers. Clin Diabetes 1 January 2022; 40 (1): 10–38. <https://doi.org/10.2337/cd22-as01>

KEEP A HIGH THRESHOLD FOR INVASIVE PROCEDURES

This STW has been prepared by national experts of India with feasibility considerations for various levels of healthcare system in the country. These broad guidelines are advisory, and are based on expert opinions and available scientific evidence. There may be variations in the management of an individual patient based on his/her specific condition, as decided by the treating physician. There will be no indemnity for direct or indirect consequences. Kindly visit the website of DHR for more information: (stw.icmr.org.in) for more information. ©Department of Health Research, Ministry of Health & Family Welfare, Government of India.