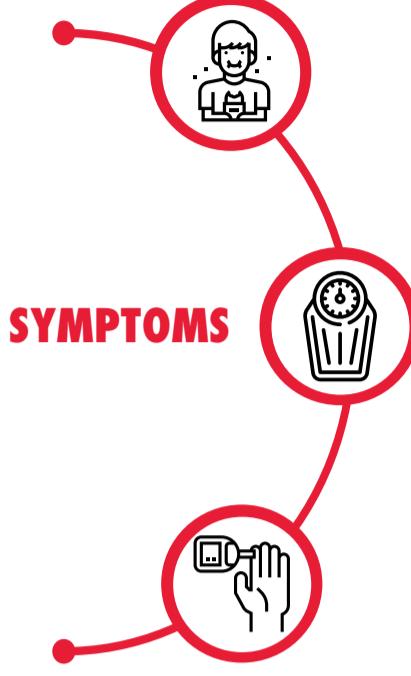


## Standard Treatment Workflow (STW)

# DIABETES MELLITUS TYPE 1

### ICD-10-E10



<b>Polydipsia</b>	<b>DIAGNOSIS</b>
<b>Polyuria / Nocturia</b>	<ul style="list-style-type: none"> <li>• Diagnosis of diabetes: Fasting plasma glucose <math>\geq 126</math> mg%; post-glucose <math>\geq 200</math> mg%; HbA1c <math>\geq 6.5\%</math> (all to be re-confirmed); random glucose <math>\geq 200</math> mg% with symptoms</li> <li>• Characteristic of T1 diabetes; urine/blood ketones: moderate-large (in &gt; 50%)</li> <li>• Continuous requirement of insulin since diagnosis</li> </ul>
<b>Polyphagia</b>	
<b>Weight loss</b>	
<b>Short duration of complaints</b>	
<b>Diabetic ketoacidosis as first presentation</b>	<b>INVESTIGATIONS</b>
	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

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
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### 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/ld22-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](http://stw.icmr.org.in)) for more information.