**Management of Type 2 Diabetes Mellitus**

The following guideline applies to patients aged 18-75 years with type 2 diabetes mellitus. It recommends specific interventions for periodic medical assessment, laboratory tests and education to guide effective patient self-management.

### Key Components

**Assessment (at least every 6 months, more frequently as needed to support management of weight, blood pressure, glycemia or secondary prevention interventions)**

- **Weight [A]:** recent weight trend. Goal for overweight patients is gradual weight loss. Weight gain is a red flag and should prompt aggressive interventions to support weight stabilization or weight loss. Record BMI annually.
- **Blood pressure [A]:** goal <140/90. If high cardiovascular disease (CVD) risk (10-year ASCVD risk ≥ 15%) or known CVD, <130/80. Calculate ASCVD risk. Record BP and risk results. Refer to treatment algorithm (p. 124/S116) for patients with diabetes.
- **Glycemia:** usually measured with A1c [E], fasting glucose or continuous glucose monitoring may be used. Individualize the A1c goal (pg. 79/S71). Goal depends on patient's health and frailty status. See box below for A1c targets. Social determinants of health: especially food insecurity, housing stability and financial barriers

### Additional assessment and interventions:

- **CVD:** smoking; lipid profile [E]; statin [A]: if confirmed CVD. ASA (75-162 mg/day) unless contraindicated. [A]
- Tobacco/nicotine cessation [B] including second-hand smoke avoidance, offer nicotine replacement therapy and/or non-nicotine medications (varenicline, bupropion, others). [A]
- Blood pressure control [A], diet and exercise, weight loss, SGLT-2 inhibitors, GLP-1 agonists.
- Chronic kidney disease (CKD): microalbuminuria [B], ACE inhibitor or ARB. Serum creatinine for estimated glomerular filtration rate (eGFR) annually. [B]
- Blood pressure control, glycemic control, limit NSAIDS and other renal-toxic medications.
- Retinopathy: fundoscopic exam by an ophthalmologist or optometrist, or fundal photography if no history of retinopathy. [B] If retinopathy, repeat eye exam annually. If no retinopathy, every 1-2 years.
- Glycemic control.
- Foot ulcers: foot exam every visit. [B] Review home foot care education including exercise, appropriate footwear, nail and skin care. [B] Refer to podiatrist or foot care specialist if high risk feet.
- Immunizations [C]: ensure appropriate immunization status, especially pneumococcal (PPSV23), influenza and HepB.
- Infectious diseases: pneumococcal, influenza and HepB vaccines
- Non-alcoholic steatohepatitis (NASH): consider screening with LFTs; treatment is diet, exercise and weight loss
- Importance of participation in Diabetes Self-Management Education and Support (DSMES) [A] from a collaborative team or diabetic educator. Locate DSMES services
- Preconception counseling for all women capable of pregnancy. [A]

### Weight Loss:

For those patients who are obese or gaining weight over time, consider referral to a comprehensive weight loss program if available, or to a diabetes educator.

Nutritional counseling should focus on: increasing daily consumption of low glycemic index vegetables, moderate consumption of protein and heart health fats, and decreasing or eliminating high glycemic index and highly processed carbohydrates including sugar-sweetened beverages. Consider medical work-up for sleep apnea, hypothyroidism, anemia. Review medication list to eliminate obesogenic medication choices where other options are available. Encourage 30 minutes of walking daily or other exercise program.

### Hypertension control:

Evidence-based non-pharmacologic interventions for blood pressure management include weight loss, regular exercise, salt restriction and alcohol reduction.

First-line medication for blood pressure management in patients with diabetes are ACE-I/ARB, thiazide-like diuretic, or dihydropyridine CCB. [A]

### Glycemic Control:

Most type 2 diabetics benefit from Metformin, if tolerated, as it's been shown to slow progression of the disease and it can help weight loss. For those not well controlled (A1c > 7% for most people) with diet, exercise and metformin, additional medications should be considered. Consider newer medications such as SGLT-2 inhibitors and GLP-1 agonists which have been shown to slow progression of heart disease, heart failure, and CKD, and to induce weight loss in people with diabetes.

Educate on role of self-monitoring of blood glucose in glycemic control. [A]

**A1c Goals:**

- ≤6.5% - women planning pregnancy [B]
- ≤6.5% - treated only with lifestyle, metformin-like drugs [A]
- ≤7% - for most patients [A]
- 7-8% - those with a <10 year life expectancy, severe hypoglycemia, severe macrovascular complications or severe CKD

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**Levels of Evidence for the most significant recommendations:**

<table>
<thead>
<tr>
<th>Level</th>
<th>Description</th>
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<tbody>
<tr>
<td>A</td>
<td>Randomized controlled trials</td>
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<tr>
<td>B</td>
<td>Controlled trials, no randomization</td>
</tr>
<tr>
<td>C</td>
<td>Observational studies</td>
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<tr>
<td>E</td>
<td>Opinion of expert panel</td>
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This guideline lists core management steps. It is based on the American Diabetes Association Standards of Medical Care in Diabetes - 2020 Jan; 43 (Supplemental 1): S1-S212. Individual patient considerations and advances in medical science may supersede or modify these recommendations.


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