Michigan Quality Improvement Consortium Guideline

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 glycemia, weight, blood pressure, and secondary prevention interventions)

Glycemia: usually measured with A1c **[D]**, fasting glucose or continuous glucose monitoring (CGM) may be used. Individualize the A1c goal (S89 Figure 6.2). Goal depends on patient's health and frailty status. See box below for A1c targets.

Weight **[A]**: recent weight trend. Goal for overweight/obese patients is 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.

Social determinants of health: especially food insecurity, housing stability, financial barriers, and health insurance status.

Additional assessment and interventions:

CVD: lipid profile **[D];** moderate dose statin for most patients 40-75 years of age without CVD **[A]**; high dose statin for all patients with CVD **[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]**

Retinopathy: fundoscopic exam by an ophthalmologist or optometrist, or fundus photography if no history of retinopathy. **[B]** If retinopathy, repeat eye exam at least annually. If no retinopathy, every 1-2 years. Glycemic control.

Chronic kidney disease (CKD): microalbuminuria assessment and **[B]** serum creatinine for estimated glomerular filtration rate (eGFR) annually. **[B]** Glycemic control, blood pressure control with ACE inhibitor or ARB and SGLT-2 inhibitors or GLP-1 agonist, consider mineralocorticoid receptor antagonist. Limit NSAIDS and other renal-toxic medications.

Foot ulcers: 10 g monofilament test annually to identify feet at risk, inspect feet at every visit. **[B]** Review home foot care education including physical activity, appropriate footwear, nail and skin care. **[B]** Refer to podiatrist or foot care specialist if high risk feet.

Importance of participation in Diabetes Self-Management Education and Support or Training (DSMES) **[A]** from a collaborative team or diabetic educator. Locate DSMES services.

Preconception counseling for all women capable of pregnancy. **[A]**

Dental care

Non-alcoholic fatty liver disease (NAFLD): screen with Fibrosis-4 (FIB-4) index using age, AST, ALT, and platelet count. If at indeterminant risk (FIB-4 1.3-2.67), perform elastography (FibroScan). If at high risk (FIB-4 >2.67 or FibroScan Liver Stiffness Measure [LSM] ≥8 kPa), refer to hepatology. Treatments for NAFLD include weight loss, pioglitazone, and GLP1-RAs.

Immunizations **[C]:** ensure appropriate immunization status, especially pneumococcal, influenza, COVID-19 and HepB.

Glycemic Control:

Most patients with type 2 diabetes benefit from Metformin, as it is effective and helps with weight loss. If metformin not tolerated or A1c not at target, additional medications should be used. SGLT-2 inhibitors or GLP-1 agonists should be used in people with CVD, heart failure, and CKD, to slow disease progression (S134 Figure 9.3 and S136 Figure 9.4).

Educate on role of self-monitoring of blood glucose in glycemic control. **[A]** Consider CGM for patients treated with multiple daily injections of insulin or insulin pumps who adjust doses and/or have histories of severe hypoglycemia.

A1c Targets:

<6.5% women planning pregnancy **[B]**
<7% - for many non-pregnant adults without hypoglycemia [A]
<8% for adults at increased risk for hypoglycemia or for whom potential harms of treatment are greater than benefits **[D]**
Avoid reliance on A1c for individuals with recurrent hypoglycemia, severe cognitive impairment, advanced kidney disease, or limited life expectancy **[D]**

Weight Management:

For those patients who are overweight/obese or gaining weight, consider referral to a comprehensive weight management program or a dietitian or diabetes educator.

Nutritional counseling should focus on caloric restriction and increasing daily consumption of non-starchy vegetables, moderate consumption of protein and heart healthy fats, and decreasing or eliminating simple sugars including sugar-sweetened beverages.

Consider medical work-up for sleep apnea, hypothyroidism, anemia.

Eliminate or replace obesogenic medications with weight negative or weight neutral medications when available.

Encourage 30 minutes of brisk walking daily or other physical activity program.

Hypertension control:

Evidence-based non-pharmacologic interventions for blood pressure management include weight loss, regular physical activity, 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]** Refer to treatment algorithm (S149 Figure 10.2) for patients with diabetes.

Levels of Evidence for the most significant recommendations: A = randomized controlled trials; B = controlled trials, no randomization; C = observational studies; D = opinion of expert panel

This guideline lists core management steps. It is based on the American Diabetes Association Standards of Medical Care in Diabetes - 2022 Jan; 45 (Supplemental 1): S1-S264. Individual patient considerations and advances in medical science may supersede or modify these recommendations.

Approved by MQIC Medical Directors 2000, 2002, 2004, 2006; June 2008, 2010, 2012, 2013, 2014, 2015, 2016, 2018, 2020, 2022