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Owner Katie Egan:
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Diabetes Management for Non-Pregnant Adults in the Outpatient Setting Guideline

Clinical Care Guideline

PURPOSE

This Clinical Care Guideline is intended to assist care providers in the screening, diagnosis, and management of patients with diabetes mellitus.

INCLUSION CRITERIA

This applies to Adult Patients (>18 years old) who are not pregnant or less than 12 weeks postpartum.

RESPONSIBILITY

Providers who screen, diagnosis and or manage adult patients with diabetes mellitus who are not pregnant or less than 10 weeks post partum.

GUIDELINE

Care providers are expected to follow the most current evidence-based recommendations for diabetes care detailed in the American Diabetes Association's *Standards of Medical Care in Diabetes*. The Introduction chapter to the 2022 Standards can be viewed at: <https://doi.org/10.2337/dc22-Sint>.

The following is a summary of the 2022 ADA Standards of Care in Diabetes, with additional specific guidance for providers.

1. CLASSIFICATION AND DIAGNOSIS OF DIABETES-

- a. Also see ADA Standards of Care, 2. Classification and Diagnosis of Diabetes - <https://doi.org/10.2337/dc22-S002>
- b. Prediabetes and diabetes may be diagnosed based on glucose criteria, either fasting plasma glucose (FPG) or the 2-hour plasma glucose during a 75-gram oral glucose tolerance test (OGTT), or A1c criteria.
- c. In a patient with classic symptoms of hyperglycemia or hyperglycemia crisis, a random glucose >200 mg/dl is diagnostic of diabetes.
- d. Use Hemoglobin **A1c** as the preferred screening test for prediabetes and diabetes. Risk of future diabetes is continuous across the prediabetes A1c range and becomes disproportionately greater at the higher end of this range. In the absence of unequivocal hyperglycemia, confirm results by repeat testing.
- e. A1c ranges:
 - i. Normal <5.7%
 - ii. Prediabetes 5.7-6.4%
 - iii. Diabetes 6.5% and above
- f. Distinguishing Type 1 from Type 2 diabetes- Measure glutamic acid decarboxylase (GAD) antibodies and c-peptide secretion to distinguish type 1 from type 2 diabetes. High GAD with undetectable c-peptide is typically seen in type 1 diabetes. The following should raise suspicion for type 1 diabetes: age of onset <35 years, body mass index (BMI) <25 kg/m², unintentional weight loss, ketoacidosis, and glucose >360 mg/dl at presentation. Individuals in whom the diagnosis of type 2 diabetes is uncertain can be referred to the Endocrinology Clinic for evaluation.
- g. Screening- Screen **all** adults beginning **at age 35 years (regardless of BMI or risk factors)**, and younger adults who are overweight or obese (BMI ≥25 kg/m² (or ≥23 kg/m² in Asian) **and** have one or more of the following additional **risk factors** for diabetes:

- First-degree relative with diabetes
- High-risk race/ethnicity (e.g. African American, Latino, Native American, Asian American, Pacific Islander)
- History of CVD
- Hypertension (≥140/90 mmHg or on therapy for hypertension)
- HDL cholesterol level <35 mg/dL and/or a triglyceride level >250 mg/dL
- Women with polycystic ovary syndrome
- Physical inactivity
- Other clinical conditions associated with insulin resistance (e.g., severe obesity, acanthosis nigricans)

1. Screen individuals with **HIV** using a **fasting glucose**, not A1c. Screen individuals with HIV for prediabetes and diabetes prior to starting antiretroviral therapy, when switching antiretroviral therapy, and 3-6 months after starting or switching antiretroviral therapy. Screen every year if initial screening is in normal range.
2. Test individuals with **prediabetes** and anyone on **atypical antipsychotic** medication **every year**, and individuals with **normal** screening every **1-3** years (depending on risk status).
3. Evaluate individuals with **prediabetes** for other cardiovascular disease risk factors.

1. PREVENTION OR DELAY OF TYPE 2 DIABETES

- a. Refer individuals with prediabetes to an intensive behavioral lifestyle intervention program modeled on the Diabetes Prevention Program to achieve and maintain 7% weight loss and increase moderate-intensity physical activity to at least 150 min/week.
- b. Consider metformin therapy for prevention of diabetes, particularly for individuals with BMI ≥ 35 kg/m², those less than 60 years of age, and women with history of gestational diabetes.

2. COMPREHENSIVE MEDICAL EVALUATION AND ASSESSMENT OF COMORBIDITIES

- a. Complete a comprehensive diabetes medical evaluation at the initial, follow-up, and annual visits for all individuals with diabetes (See ADA Standards, Table 4.1)

3. LIFESTYLE MANAGEMENT

- a. Diabetes Self-Management Education and Support (DSMES)- All individuals with diabetes should receive DSMES. Evaluate the need for DSMES at diagnosis, annually, when complications arise, and after transitions of care.
- b. Nutrition therapy- An individualized medical nutrition therapy program is recommended for all individuals with type 1 or type 2 diabetes, prediabetes, and gestational diabetes. Encourage individuals with diabetes to eat a healthy balanced diet, with reduced intake of refined carbohydrates and added sugars, and a focus on nutrient-dense carbohydrates that are high in fiber, including vegetables, legumes, fruits, dairy (milk and yogurt), and whole grains. Discourage consumption of sugar-sweetened beverages and processed "low-fat" or "nonfat" food products with high amounts of refined grains and added sugars in all individuals.
- c. Weight management - Refer individuals who are overweight or obese and have type 2 diabetes or prediabetes to weight-loss intervention programs. Goal weight loss should be >5% and should be achieved by the combination of reduced caloric intake and lifestyle modification.
- d. Physical activity- Most adults with diabetes should engage in 150 minutes or more of moderate-to-vigorous intensity aerobic activity per week, spread over at least 3 days/week, with no more than 2 consecutive days without activity. Shorter durations (minimum 75 min/week) of vigorous-intensity or interval training may be sufficient for younger and more physically fit individuals.
 - i. Adults with diabetes should engage in 2-3 sessions/week of resistance exercise on nonconsecutive days.

- ii. All adults, particularly those with type 2 diabetes, should minimize prolonged sitting/sedentary behavior.
- e. Smoking Cessation
 - i. Advise all individuals to not use cigarettes or other tobacco products, or e-cigarettes.
- f. Psychosocial Issues
 - i. All individuals with diabetes should be evaluated for psychosocial factors that may affect diabetes control, including: attitudes about diabetes, expectations for medical management and outcomes, affect or mood, general and diabetes-related quality of life, available resources (financial, social, and emotional), and psychiatric history.
 - ii. Consider screening for symptoms of diabetes distress, depression, anxiety, disordered eating, and cognitive impairment.

4. GLYCEMIC MONITORING AND TARGETS

- a. Monitoring
 - i. Glycemic control is assessed by A1c, continuous glucose monitoring (CGM) using time in range (TIR) and/or glucose management indicator (GMI), or blood glucose monitoring (BGM).
- b. Check A1c **every 3 months** in individuals who are **not at goal or whose therapy has changed**, and **every 6 months** in individuals **at goal and with no change in therapy**.
- c. A1c target
 - i. The **A1c target for most non-pregnant adults with diabetes should be <7%**.
 - ii. A more stringent A1c target of <6.5% may be appropriate for certain individuals (those with diabetes for less than 5 years, type 2 diabetes treated with lifestyle +/- metformin only, long life expectancy, or no significant cardiovascular disease) as long as it can be achieved without hypoglycemia.
 - iii. If using cgm, a parallel goal is time in range >70%, with time below range of <4% and time with blood glucose <54 mg/dl of <1%.
 - iv. A less stringent A1c target of <8% or <8.5% may be appropriate for individuals with a history of severe hypoglycemia, limited life expectancy, advanced microvascular or macrovascular complications, extensive comorbid conditions, or long-standing diabetes in whom the goal is difficult to achieve despite diabetes self-management education, appropriate glucose monitoring, and effective doses of multiple glucose-lowering agents including insulin.
 - v. A1c < 8% within the last 3 months is generally adequate for **elective surgery**. Individuals who are not eligible for surgery due to high A1c but are motivated to improve their glycemic control can be referred to Clinical Pharmacist or Endocrinology for intensive management.

- vi. There is no benefit to A1c monitoring for patients at end of life.
- d. SMBG (self-monitored blood glucose) goal- A1c levels correlate to the following SMBG goals:
 - i. **A1c < 7%:**
 - 1. Fasting 80-130 mg/dL
 - 2. Pre-prandial 80-130 mg/dL
 - 3. 2 hour post-prandial < 180 mg/dL
 - 4. Bedtime 100-150 mg/dL
 - ii. **A1c < 8%**
 - 1. Fasting 100-150 mg/dL
 - 2. Pre-prandial 100-150 mg/dL
 - 3. 2 hour post-prandial < 200 mg/dL
 - 4. Bedtime 150-200 mg/dL
- e. Hypoglycemia
 - i. Hypoglycemia classifications
 - 1. **Hypoglycemia alert value (level 1)** - blood glucose **≤70 mg/dL**. Should prompt treatment with fast-acting carbohydrate and dose adjustment of glucose lowering therapy.
 - 2. **Clinically significant hypoglycemia (level 2)** – blood glucose **<54 mg/dL**. Sufficiently low to indicate serious, clinically important hypoglycemia.
 - 3. **Severe hypoglycemia (level 3)** - No specific glucose threshold. Hypoglycemia **associated with severe cognitive impairment requiring external assistance** for recovery.
 - ii. Hypoglycemia treatment
 - 1. Treat conscious individuals with blood glucose ≤70 mg/dL with 15-20 grams oral glucose, or any form of carbohydrate that contains glucose. Repeat treatment after 15 minutes if SMBG shows continued hypoglycemia. Once SMBG returns to normal, individual should eat a meal or snack to prevent recurrence of hypoglycemia.
 - 2. Prescribed glucagon for all individuals at increased risk of clinically significant hypoglycemia. Family members/friends/ caregivers should know where glucagon is kept and when and how to administer it.
 - 3. Reevaluate treatment regimen in all patients with hypoglycemia

5. PHARMACOLOGIC APPROACHES TO GLYCEMIC TREATMENT

a. Type 1 diabetes

- i. Individuals with type 1 diabetes should be treated with a combination of long-acting and short-acting insulin or with continuous insulin infusion. Refer individuals with type 1 diabetes to Endocrinology for ongoing management.
- b. Type 2 diabetes- general recommendations
 - i. Individualized glycemic management can be achieved by following the steps outlined in the Decision Cycle for Patient-centered Glycemic Management in ADA Standards 2022 document (See ADA Standards, Figure 4.1).
- c. Type 2 diabetes management- (See ADA Standards, Figure 9.3- [American Diabetes Association \(diabetesjournals.org\)](https://diabetesjournals.org))
 - i. **First-line** therapy for individuals with type 2 diabetes **depends on comorbidities**, patient-centered factors, and management needs, and generally includes metformin and comprehensive lifestyle interventions including weight management and physical activity.
 - ii. Patients with atherosclerotic cardiovascular disease (**ASCVD**), heart failure (**HF**), or chronic kidney disease (**CKD**) should be considered for treatment with medications with proven benefit for individuals with these conditions **regardless of baseline A1c, A1c goal, or metformin use**.
- d. REFERRALS
 - i. Diabetes education (by clinic RN or diabetes care and education support specialist) is recommended at diabetes diagnosis, at insulin start/ medication change, and yearly.
 - ii. Referral to Clinical Pharmacist is recommended for patients who have inadequate glycemic control and are on complex medical regimens and/or have diabetes comorbidities requiring medical management.
 - iii. Patients who require titration of basal insulin can be referred to a clinic RN for Insulin Titration Protocol
 - iv. Management by Endocrinology is recommended for the following patients with diabetes:
 - 1. Patients with type 1 diabetes
 - 2. Patients on an insulin pump
 - 3. Patients receiving concentrated insulin (e.g. U500)
 - 4. Patients with history of severe or clinically significant hypoglycemia (severe cognitive impairment requiring external assistance for recovery, history of confirmed BG <54 mg/dL, or BG <70 mg/dL despite medication adjustment after initial occurrence)
 - 5. Patients with hypoglycemia unawareness
 - 6. Patients with ESRD, on dialysis

7. Patients with steroid-induced hyperglycemia

6. MANAGEMENT AND PREVENTION OF DIABETES COMPLICATIONS

- a. Refer to current American Diabetes Association guidelines.

Information in these guidelines is to be used to guide clinical care and does not take the place of clinical judgement.

EXTERNAL REFERENCES

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>

American Diabetes Association; Introduction: *Standards of Medical Care in Diabetes—2022*. *Diabetes Care* 1 January 2022; 45 (Supplement_1): S1–S2. <https://doi.org/10.2337/dc22-Sint>

American Diabetes Association Professional Practice Committee; 9. Pharmacologic Approaches to Glycemic Treatment: *Standards of Medical Care in Diabetes—2022*. *Diabetes Care* 1 January 2022; 45 (Supplement_1): S125–S143. <https://doi.org/10.2337/dc22-S009>

DHMP/DHHA RELATED DOCUMENTS

None

This Clinical Care Guideline is intended to assist care providers in the provision of patient care. This document serves as a guide, and is not a substitute for independent medical decision-making.

Approval Signatures

Step Description	Approver	Date
Final Signatory	Christine Seals-Messersmith: Medical Director Managed Care	12/2024
Formatting	Candy Gibbons: Executive Assistant [SG]	11/2024
Document owner	Katie Egan: Manager, Health Plan Quality Improvement	11/2024

Applicability

Denver Health Medical Plan (DHMP)