CLINICAL PRACTICE GUIDELINE

Diabetes in Primary Care

Brief checklist for managing patients diagnosed with Diabetes. See Up To Date® and ADA recommendations for detailed guidelines.

Goals of Care

- Optimize blood glucose
- Optimize cardiovascular health
- Prevent DM complications and comorbidities

Screenings

- ☐ Every visit:
  - ☐ Blood pressure
  - ☐ Foot check with shoes and socks off
- ☐ Every 3 months: A1C (6 months if within target range)
- ☐ Every 6 months: Dental exam and cleaning
- ☐ Annual:
  - ☐ Cholesterol (lipid profile)
  - ☐ Nephropathy
  - ☐ Retinopathy test and complete eye exam
  - ☐ Foot complete exam
- ☐ Cardiovascular disease risk assessment
- ☐ Neuropathy (if elevated A1C)

Always Assess Patient Self-Management Needs

- ☐ Blood glucose monitoring devices
- ☐ High/low blood sugar
- ☐ Medication adherence
- ☐ Weight Management
- ☐ Nutrition
- ☐ Physical activity
- ☐ Foot self-care
- ☐ Stress management
- ☐ Sick days and medical procedures

Pharmaceutical

- ☐ Antihyperglycemic therapy
- ☐ Statin if hyperlipidemia ACE/ARB if hypertension
- ☐ Aspirin if ASCVD risk/benefit deems appropriate

UH Diabetes Help Line

Need guidance on how to treat a patient's diabetes or where to refer at UH? Send a message directly to a UH diabetes expert. Responses usually within 1 business day.

Epic Inbasket: Diabetes Help Line

Email: DiabetesHelpLine@UHHospitals.org

A1C Goal (ADA 2022)

<7%

In many non-pregnant adults. The goal may be more stringent for those with no CVD or longer life expectancy.

<8%

Less stringent in patients with severe hypoglycemia, cardiovascular disease, multiple comorbidities, shortened life expectancy.

Always Complete a Wellness Assessment

- ☐ USPSTF age and gender appropriate screenings
- ☐ Smoking and e-cig cessation
- ☐ Immunizations: follow CDC Adult Immunization Schedule by Medical Condition
  - ☐ COVID-19
  - ☐ Hepatitis
  - ☐ HPV
  - ☐ Influenza, inactivated
  - ☐ MMR
  - ☐ Pneumococcal
  - ☐ Tdap or TD
  - ☐ Varicella
  - ☐ Zoster

Team-Based Care

- ☐ CINEMA
- ☐ Diabetes Help Line
- ☐ Behavioral Health
- ☐ Renal Health program
- ☐ Smoking cessation
- ☐ Integrative Care resources
- ☐ Exercise resources
- ☐ UH Employee Diabetes Support

Quality Care Network

Diabetes Management

These Clinical Practice Guidelines are guidelines only. In no way should these Clinical Practice Guidelines be used as a substitute for clinical or medical judgement.

Patient Diagnosis	Diagnostic Criteria	Approach to Care	See Sections for More Info
High Risk for Diabetes	Test at least every 3 years if Risk Factors: • Age ≥ 35 • 1st degree relatives with DM • High risk ethnicity • CVD • HTN • HDL <35, TG>250 • PCOS • Physical inactivity • Other ◦ Severe obesity, BMI >30, acanthosis, insulin resistant) • Gestational diabetes history	• Food is medicine/Nutrition Theory • Activity is the key/Exercise recommendation • Behavior intervention/Education	Patient Self-Management of Diabetes
Pre-Diabetes or Cardiometabolic Syndrome	• FPG 100-125 mg/DL Or • 2 h PG 140-199 mg/dL Or • A1C 5.7-6.4% Continue to test annually.	• Food is medicine/Nutrition Theory • Activity is the key/Exercise recommendation • • Behavior intervention/Education • Optimize pharmacotherapy	Patient Self-Management of Diabetes Medications
Diabetes Mellitus, Classify Type 1/Type 2/ Others	• FPG >/126 mg/DL Or • 2 h PG = > 200 mg/dL Or • A1C = > 6.5% • Symptoms hyperglycemia and random PG = > 200 mg/DL	• Type 1 Diabetes consider Endocrinology consult • Type 2 Diabetes and other types, proceed to clinical pearls	All Sections

Treatment of Diabetes Hyperglycemia

Define A1C Goal

A1C goal of less than 7% is appropriate for many healthy, non-pregnant adults. A1C targets should be individualized in other cases, for example:

- Lower targets (<6.5%): In younger patients there's a benefit in risk reduction of microvascular complications if it outweighs safety concerns (i.e., hypoglycemia) and is without polypharmacy side effects.
- Higher targets (up to 8%, or even 9%): In older patients with long-standing diabetes, there's an increased risk for hypoglycemia and/or limited life expectancy, special populations. See ADA guidelines for more information.

Refer to Endocrinology if:

- Type 1 Diabetes,
- Frequent hypoglycemia
- Inability to reach glycemic targets after reasonable trial
- Excessive drug side effects

Diabetes Treatment Approach by Glycemic Control

A1C is less than 7% Meeting target goal	A1C is 7-9% Re-evaluate and make changes	A1C is > 9% Change course and enlist support
• Consider education and behavioral health needs • Continue monitoring and optimization of medications: See below • Consider referral CINEMA for cardio-metabolic health	• Optimize medications: See below • Consider education and behavioral health needs • Consider Pharmacy intervention • Consider referral CINEMA, Endocrinology	• Optimize medications: See below • Consider education and behavioral health needs • Consider Pharmacy intervention and early insulin start • Consider referral to Endocrinology, CINEMA

Medications

Type 2 Diabetes First Line: Comprehensive lifestyle changes are recommended (referral to DSMEs and MNT) for all. Pharmacological therapy recommendations (if CKD, consider renal dosing):

- Start insulin therapy if signs of insulin deficiency (polyuria, polydipsia, weight loss, severe hyperglycemia and/or ketonuria) and/or A1c > 10.0%.
- If not starting insulin, individualize care. There is no one-size-fits-all first-line therapy.
  - GLP-1RA, SGLT-2i: cardiovascular and renal benefits, minimizing hypoglycemia, weight loss
  - Metformin: minimizing hypoglycemia, cost and access
  - TZD (Thiazolidinediones): minimizing hypoglycemia, cost and access
  - DPP-4 inhibitors (Dipeptidyl peptidase 4; gliptins): minimizing hypoglycemia
  - Sulfonylureas: recommended as last choice if cost and access are barriers

Type 1 Diabetes

- Endocrine consult is recommended.
- Type 1 diabetes requires 3-4 injections of insulin per day. Insulin therapy should include basal insulin plus prandial: ideally insulin matched to carbohydrate intake, premeal glucose, and anticipated activity.
- Consider continuous glucose monitoring, insulin pump.

Additional Pharmacotherapy Resources

- Drug-specific and patient factors to consider when selecting antihyperglycemic treatment in adults with type 2 diabetes (ADA)/UpToDate/AACE
- Glucose-lowering medication in type 2 diabetes: overall approach (ADA)

Quality Standards of Care for DM Patients

Screening Labs and Exams		
Labs	**Frequency**	**Comments**
A1C	Every 3-6 months	Every 3-6 months if uncontrolled (A1C ≥7%), on insulin, and/or evaluating change in treatment. Every 6 months if controlled (A1C <7%) and therapy/clinical circumstances remain unchanged
Lipid profile	Annually	Repeat lipid profile 4-12 weeks after a change in therapy
Urine albumin/creatinine	Annually	Start testing 5 years after diagnosis for type 1 DM; start at diagnosis for type 2 DM. Confirm if positive given risk of false positives from exercise, fever, hyperglycemia, etc. In non-pregnant patients with microalbuminuria (≥30mcg/mg), use ACE inhibitors or ARBs to delay progression of nephropathy; monitor serum K+ and creatinine.
Serum creatinine, K+, and eGFR	Annually	More frequently if CKD (See UHQCN CKD guideline)
Exams		
Weight and height	Annually or more frequently	
Blood pressure	Every visit	See below
Retinopathy	• Annually for most patients • More frequently in patients with diagnosed retinopathy • For patients with type 2 DM within glycemic target, if no signs of diabetes-related retinopathy, the screening interval can be increased to 2-3 years (ADA 2022, Standards of Medical Care)	Initial comprehensive eye exam with dilation for newly diagnosed diabetes: • Type 2: upon diagnosis • Type 1: within 5 years of diagnosis Retinal photography is an option after initial eye exam If retinal photos are poor quality or have abnormal findings, refer patient to ophthalmology
Feet/Neuropathy	Every visit: visual inspection of skin and deformity Annually: complete visit	Complete exam: • Distal symmetric polyneuropathy screen of feet • 10-g monofilament pressure Pinprick sensation, vibration perception with 128 Hz tuning fork, or ankle reflexes • Pulses in legs and feet • Symptoms: pain, burning, numbness • History of ulceration risk, i.e., smoking, vascular disease, retinopathy, renal disease, previous lesions
Dental exam and cleaning	Every 6 months	Refer to dentist

Immunizations for Adult Patients with Diabetes

Pneumococcal (PPSV23)	Patients with diabetes	19 - 64	1 dose; after age 65 give another dose, at least 5 years after first
Hepatitis B	Patients with diabetes due to percutaneous risk for exposure to blood	< 60; ≥ 60, if additional risk factors	2 doses; 4 weeks apart
HPV	Routine for all patients*	≤ 26	Shared decision making in ages 27 - 45
Influenza	Routine for all patients*	All adults	1 dose annually. Inactivated is preferred. Precaution with LAIV (live attenuated); do not use in age ≥ 50
MMR	Routine for all patients*	Born in 1957 or later	1 dose
TDAP	Routine for all patients*	All adults	1 dose, then TDAP booster every 10 years
Varicella	Routine for all patients* without documented immunity	Born in 1980 or later	2 doses; 4 - 8 weeks apart
Zoster (Shingrix)	Routine for all patients*	≥ 50	2 doses; 2 - 6 months apart
COVID-19	Routine for all patients*	All adults	For updated guidelines, see CDC Adult Immunization Schedule

*Unless contraindication

Source: CDC Adult Immunization Schedule

Treating Comorbidities

Medication Basics for Diabetes and Common Comorbidities

Start here: Diabetes hyperglycemia	• Metformin • Insulin, if marked polyuria, polydipsia, weight loss, severe hyperglycemia, and/or ketonuria
Cardiovascular disease	• SGLT-2i/GLP-1 RA • Heart failure consider SGLT-2i
Hyperlipidemia	• High-intensity Statin if LDL ≥190 mg/d or ASCVD 10 year risk ≥20% • Moderate-intensity Statin if Diabetes but without CVD aged 40-75 & LDL 70-189 mg/dl
Kidney disease	• If CKD, consider SGLT-2i or GLP-1 RA • Include ACEI or ARB

For additional information, see UHQCN Clinical Practice Guidelines on Hyperlipidemia and Chronic Kidney Disease.

Blood Pressure Clinical Pearls:

Blood pressure (BP) targets should be individualized.

- Individuals with diabetes and known ASCVD or higher 10-yr ASCVD risk (>15%) BP goals <130/80 may be appropriate if it can be safely attained; otherwise, target <140/90.
- All patients should be counseled for:
  - Weight loss, if overweight
  - DASH diet, including reducing salt to <1500 mg/day and increasing potassium intake, or Mediterranean diet
  - Reduction of alcohol intake
  - Physical activity
- Pharmacotherapy for Blood Pressure in patients with Diabetes
- According to the JNC8 and the 2017 ACC-AHA HTN Guideline, in the general non-Black population with diabetes, initial anti-hypertensive treatment should include a thiazide-type diuretic (chlorthalidone preferred), calcium channel blocker (CCB), angiotensin-converting enzyme inhibitor (ACEI), or angiotensin receptor blocker. In the Black population, initiate therapy with either a thiazide-type diuretic or CCB.
- If there is evidence of kidney disease, include ACEI or ARB.
- Patients with type 2 diabetes frequently need a diuretic-based regimen to adequately control BP, making a thiazide/ACEI or ARB combo a good initial combination regimen.

Cholesterol Clinical Pearls

- Statins have been shown to have significant benefits on primary and secondary cardiovascular outcomes in patients with diabetes.
- For patients with LDL ≥190 mg/dl: high-intensity statin therapy, as tolerated, or intensified to achieve 50% LDL reduction.
- For patients with diabetes but without atherosclerotic cardiovascular disease, aged 40-75, with LDL 70-189 mg/dl: moderate-intensity statin therapy, or high-intensity statin therapy if 10-year ASCVD risk ≥20%, as tolerated.
- Additional information:
  - UHQCN Hyperlipidemia Clinical Practice Guideline: for assessment of risk and cholesterol treatment, including use of statins, ezetimibe, and PCSK9 inhibitors
  - The 2018 American College of Cardiology (ACC) and the American Heart Association (AHA) cholesterol guidelines discuss assessing cardiovascular risk and cholesterol management

Aspirin Therapy (ASA, 81 - 162 mg)

- Consider low-dose ASA use if the benefit for cardiovascular disease prevention outweighs risk for bleeding complications.
- In general, low dose ASA should be considered:
  - Age <60: Use if 10-year cardiovascular disease risk >20%, with discussion of risks and benefits with patient
  - Age 60 - <70: Use if 10-year cardiovascular risk >20% and low bleeding (e.g., gastrointestinal) risk, with discussion of risks and benefits with patient
  - Age >= 70: Do not use

Diabetes Self-Management and Education

Patient Self-Management of Diabetes

4 Critical Times

To provide Diabetes Self-Management Education and Support Services (Powers et al., 2020)

1. At diagnosis
2. Annually and/or when not meeting treatment targets
3. When complicating factors develop (e.g., new health condition, physical limitation, or mental health need)
4. When transitions in life and care occur (e.g., changes in care responsibilities, living arrangements, social support, or financial security)

Diabetes Self-Management and Education Main Topics:

- Lifestyle and general health behaviors
- Blood glucose testing
- Insulin and medication management
- Overall diabetes knowledge

Smoking cessation education	At every diabetes care visit (if applicable)
Review medication management and lifestyle modification measures	At every diabetes care visit (if applicable)
Psychosocial assessment with emphasis on depression screening	As needed; depression may be present in over of 20% of the diabetes population
Assess self-management skills: testing and insulin management; lifestyle habits; overall diabetes knowledge	At least annually; more frequently when appropriate

Food is medicine/Medical Nutrition therapy

Medical nutrition therapy (MNT) should include counseling by a registered dietician for an individualized plan. MNT is a fundamental component in the management of all types and stages of diabetes.

- Reduce sugar and added sugar in diet
- Balance carbohydrates: evenly distribute intake throughout day, increase fiber, decrease processed foods,
- Decrease saturated fat to <7% total calories and increase proportion of healthy fats (as in the Mediterranean diet)
- Reduce fried and fast foods
- Limit alcohol to ≤2 drinks/day for men and ≤1 drink/day for women
- Avoid excessively large portion sizes in general.
- Diets with promising results: USDA Dietary Guidelines for Americans, Mediterranean diet, vegetarian or vegan, low-fat, very low-fat, low-carbohydrate, very low-carbohydrate, DASH, Paleo.
- Tailor meal plans to individual preferences and culture.

Weight Management when applicable (ADA, 2021)

- Prevention of diabetes maximized with 7-10% weight reduction
- Weight-loss goal of 5-10% of baseline body weight in overweight patients with type 2 diabetes. Clinical benefits begin at just 3-5% weight loss.
- Weigh cost and benefit of continuing medications associated with weight gain
- Consider adjunctive pharmacotherapy for weight loss
- Bariatric surgery may be an option for those with BMI ≥30 kg/m2 (or ≥27.5 in Asian Americans)
- Resources:
  - Obesity/weight loss programs (see UH CPG on Obesity)
  - Behavioral health resources
  - Medical nutrition therapy (MNT) resources

Patient Self-Management of Diabetes (continued)

Activity is the key/Exercise recommendation

- ≥150 min/week of moderate-intensity aerobic activity (50-70% maximum heart rate) spread out over at least 3 days/week
- Resistance training 2-3 times/week; and in older adults, flexibility and balance training 2-3 times/week
- Reduced sedentary behavior, and interruption of prolonged sitting every 30 minutes
- Resources (see Appendix):
  - Consider CINEMA program to maximize cardio metabolic health before an exercise program
  - Exercise resources

Behavior intervention/Diabetes self-management education (DSME)

- DSME is essential to successful diabetes care, including reviewing healthy meal planning, physical activity, taking medication, healthy coping, monitoring problem solving, and reducing risks.
- DSME can be supported with motivational, collaborative, non-judgmental communication.
- Resources:
  - DSME classes
  - CDCES individual or group sessions
  - Behavior intervention

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Additional Resources

External Resources for Health Care Professionals

- American Diabetes Association: multiple resources including the Standards of Medical Care in Diabetes, updated annually. https://professional.diabetes.org/clinical-corner
- American Association of Clinical Endocrinology: multiple resources including clinical practice guideline for diabetes. https://www.aace.com/disease-and-conditions/diabetes
- Up To Date™ includes many topics related to diabetes, including comorbidities and patient education.

Patient Education Resources

- Diabetes.org – American Diabetes Association
- Diabetes-exercise.org - Diabetes Exercise News & Organization
- DiabetesWise.org – help with selecting and using diabetes devices technologies
- Eatright.org – American Dietetic Association
- Foundationforpn.org – Foundation for Peripheral Neuropathy
- Getinsulin.org – for help with affording insulin
- https://beyondtype1.org/ - support, online community, resources for those with Type 1.
- https://beyondtype2.org/ - support, online community, resources for those with Type 2.
- https://www.cdc.gov/diabetes/managing/index.html – CDC diabetes resources
- https://www.diabeteseducator.org/living-with-diabetes/Tools-and-Resources – Association of Diabetes Care & Education Specialists
- JDRF.org – Advocacy and resources for those with Type 1
- MyPlate.gov – nutrition and healthy eating
- Niddk.nih.gov – National Institutes of Health, National Institute of Diabetes and Digestive and Kidney Diseases
- Tidepool.org – Provides system for patients and providers to upload diabetes data from many devices and visualize in easy-to-understand dashboards.

Mobile Apps:

- Fooducate
- MySugr
- Glucose Buddy
- MyFitnessPal
- Calorie King
- BD Bright Diabetes Assistant
- One Drop
- Relax Lite, Insight Timer, CALM (for stress relief)