

Purpose

To identify and promote the most important contributors to improved clinical outcomes for adult diabetics in the outpatient setting.

Major Recommendations

- A reasonable A1C goal for many nonpregnant adults is <7% (53 mmol/mol).
 - or less stringent glycemic goals may be appropriate for individual patients. Goals should be individualized based on duration of diabetes, age/life expectancy, comorbid conditions, known CVD or advanced microvascular complications, hypoglycemia unawareness, and individual patient considerations.
- In patients with known CVD, consider ACE inhibitor therapy and use aspirin and statin therapy (if not contraindicated) to reduce the risk of cardiovascular events. In patients with a prior myocardial infarction, beta blockers should be continued for at least 2 years after the event. One may choose to use either rapid-acting insulin analogs or SGLT2 inhibitor per ADA recommendations.
- Weight loss is recommended for all overweight or obese individuals who have or are at risk for diabetes. If lifestyle modification implementation is not successful, then pharmacological or surgical intervention should be considered.
- Most patients with diabetes and hypertension should be treated to a systolic blood pressure goal of 120 to 140 (<140 mmHg) and a diastolic blood pressure goal of <90 mmHg (based on clinical judgement).
- For typical patients with Type 2 Diabetes ages 40-75, a moderate dose statin is recommended. For people with other forms of diabetes, given the high risk of CAD, use of a statin often makes sense, but currently no strong data exist. Data for patients over the age of 75 are unclear. If intolerant of statins, consider other appropriate lipid lowering agents.

To Achieve These Goals:

- Advise all patients not to smoke or use other tobacco products or e-cigarettes
- Individuals who have diabetes should receive individualized medical nutrition therapy (MNT), preferably provided by a registered dietitian.
- People with diabetes should receive diabetes self-management education (DSME) and diabetes self-management support (DSMS). Digital coaching and self-management interviews are effective modalities.
- Adults with diabetes should be advised to perform at least 150 min/week of moderate-intensity aerobic physical activity (50-70% of maximum heart rate), spread over at least 3 days/week with no more than 2 consecutive days without exercise. In the absence of contraindications, adults with type 2 diabetes should be encouraged to perform resistance training at least twice per week. All adults, and particularly those with type 2 diabetes, should decrease the amount of time spent in daily sedentary behavior. (B) Prolonged sitting should be interrupted every 30 minutes for blood glucose benefits, particularly in adults with type 2 diabetes.
- Patients with type 2 diabetes should have an initial dilated and comprehensive eye examination by an ophthalmologist or optometrist shortly after the diagnosis of diabetes. (and add language from summary) *Ck GRIPA/AHP quality measures re: reimbursement for other than annual exams for discussion @ QC*
- High intensity statin therapy (e.g., atorvastatin 40-80 mg or equivalent) should be added to lifestyle therapy for all patients of all ages with diabetes and overt CVD/ASCVD. If intolerant to statins, consider PCSK9 therapy.
- Consider using moderate intensity statin therapy in addition to lifestyle therapy for patients with diabetes > 75 years old without overt CVD/ASCVD.
- Metabolic surgery should be recommended to treat type 2 diabetes in appropriate surgical candidates with a BMI ≥ 40 kg/m² (BMI ≥ 37.5 kg/m² in Asian Americans) regardless of the level of glycemic control or complexity of glucose-lowering regimens and in adults with a BMI of 35.0-39.9 kg/m² (32.5-37.4 kg/m² in Asian Americans) when hyperglycemia is inadequately controlled despite lifestyle and optimal medical therapy. (A)

In patients with known CVD, use aspirin and statin therapy (if not contraindicated) to reduce the risk of cardiovascular events.

- Metformin, if not contraindicated and if tolerated, is the preferred initial pharmacological agent for type 2 diabetes. Alternate therapy, intensification of therapy or when to begin with combination therapy is well described in treatment algorithms written by the ADA or AACE.
- The value of continuous blood glucose monitoring is expanding and should be considered in appropriate patients. When used properly, real-time CGM in conjunction with intensive insulin regimens is a useful tool to lower HbA1C levels in adults with type 1 diabetes who are not meeting glycemic targets.
- Real-time CGM may be a useful tool in those with hypoglycemia unawareness or frequent hypoglycemic episodes.
- Real-time CGM should be used as close to daily as possible for maximal benefit.
- Sensor-augmented pump therapy with automatic low-glucose suspend can be considered for adults with type 1 diabetes at high risk for hypoglycemia to prevent episodes of hypoglycemia and reduce their severity.

Other Recommendations

- Either an ACE inhibitor or ARB is suggested for the treatment of the nonpregnant patient with modestly elevated urinary albumin excretion (30-299 mg/day) and is recommended for those with urinary albumin excretion >300 mg/day. Optimize glucose and blood pressure control to reduce the risk or slow the progression of nephropathy and retinopathy.
- At least once a year, assess urinary albumin (e.g., spot UACR) and (eGFR in patients with type 1 diabetes with a duration of ≥ 5 years, in all patient with type 2 diabetes, and in all patients with comorbid hypertension. In patients with established nephropathy there should be periodic assessment.
- Eye examinations for type 1 and type 2 diabetic patients should be repeated annually by an ophthalmologist or optometrist. Less frequent exams (up to every two 2 years) may be considered following one or more normal eye exams. Examinations will be required more frequently if retinopathy is progressing.
- Most people with type 1 diabetes should be treated with multiple dose insulin injections (three to four injections per day of basal and prandial insulin) or continuous subcutaneous insulin infusion (CSII) using insulin analogs to reduce hypoglycemic risk. Appropriate use of self-blood glucose testing in patients receiving basal bolus insulin therapy should be encouraged. Selection of an appropriate basal insulin needs to be made by the provider since they may not all be equivalent, including different rates of hypoglycemia.
- Insulin-treated patients with hypoglycemia unawareness or an episode of severe hypoglycemia should be advised to raise their glycemic targets to strictly avoid further hypoglycemia for at least several weeks, to partially reverse hypoglycemia unawareness, and to reduce risk of future episodes. If this fails, real time blood glucose monitoring is advisable. Real time CGM is advisable and in additional consideration should be given to addressing glycemic targets.
- Treatment for hypertension should include drug classes demonstrated to reduce cardiovascular events in patients with diabetes (ACE inhibitors, angiotensin receptor blockers, thiazide-like diuretics, or dihydropyridine calcium channel blockers). Multiple drug therapy is generally required to achieve blood pressure targets (but not a combination of ACE inhibitors and angiotensin receptor blockers). An ACE inhibitor or angiotensin receptor blocker, at the maximum tolerated dose indicated for blood pressure treatment, is the recommended first-line treatment for hypertension in patients with diabetes and urinary albumin-to-creatinine ratio 300 mg/g creatinine or 30-299 mg/g creatinine. If one class is not tolerated, the other should be substituted.
- In addition to routinely recommended vaccinations for children and adults with diabetes, all adults and children (who meet FDA and CDC recommended age requirements) should be vaccinated for the prevention of COVID-19.
- In patients with type 2 diabetes, a glucagon-like peptide 1 receptor agonist is preferred to insulin when possible.
- If insulin is used, combination therapy with a glucagon-like peptide receptor agonist is recommended for greater efficacy and durability of treatment effect.

- Patients should be referred to a nephrologist for evaluation if they have an eGFR <30 mL/min/1.73m² or for uncertainty about the etiology of kidney disease, or difficult management issues, or rapidly progressing kidney disease.

Measures Commonly Used by National Organizations

- Hemoglobin A1c Poor Control: Percentage of patients 18-75 years of age who had hemoglobin A1c > 9.0% during the measurement period (MIPS) **OR** Percentage of patients aged 18 -75 years with diabetes mellitus who had most recent hemoglobin A1c greater than 9.0%
- High Blood Pressure Control: Percentage of patients aged 18 through 75 years with diabetes mellitus who had most recent blood pressure in control (less than 140/90 mmHg)

High Risk Populations/Disparities

- Type 2 Diabetes develops more frequently in women with prior gestational diabetes mellitus and in certain racial/ethnic groups (African American, Native American, Hispanic/Latino, and Asian American). Women with diabetes are also at great risk of coronary heart disease than men with diabetes.
- Providers should assess social context, including potential food insecurity, housing stability, and financial barriers, and apply that information to treatment decisions.

EXAMINATION/TEST	FREQUENCY	GOAL RECOMMENDATION
HISTORY AND PHYSICAL		
Blood Pressure (BP)	Every visit	<140/90 with individual adjustment to lower systolic BP target as appropriate.
Weight & BMI	Every visit	Healthy Weight = BMI \geq 18.5 and <25 Advise weight management to optimize BMI.
Comprehensive Foot Exam ²	At least Annually	Sensory, visual and vascular inspection, without shoes and socks. Teach protective foot care if sensation is diminished. Refer to podiatrist.
Visual Inspection of Feet	Every visit	Inspect skin for signs of pressure and breakdown to prevent ulceration and infection. Teach protective foot care.
Hypoglycemia Assessment	Every visit	Ask about symptomatic and asymptomatic hypoglycemia.
Dilated Retinal Exam	Annually	Detect retinopathy/refer to eye care professional. May be every 2 yrs. if no retinopathy detected.
Dental	Every 6 months	Evaluate teeth and gums. Encourage daily brushing and flossing. Refer to dentist.
LABORATORY		
A1C	2 – 4 times yearly	General Goal: <7.0 with individualized goal adjustment to be more or less stringent for individual pts. as appropriate.
Fasting Lipid Profile	Annual CVD risk assessment	At the discretion of the physician based on CVD risk.
Urine albumin-to-creatinine ratio (UACR) & estimated glomerular filtration rate (eGFR)	At least annually	Assess urinary albumin (e.g., spot urine albumin-to-creatinine ratio [UACR] ⁶ & estimated glomerular filtration rate) in patients with type1 diabetes duration of \geq 5 yrs. & in all patients with type 2 diabetes and in all patients with comorbid hypertension.
IMMUNIZATIONS		
Flu Vaccine	Annually	
Pneumococcal Vaccine	Initial/ Follow-up	Administer pneumococcal polysaccharide vaccine 23 (PPSV23) to all patients with diabetes \geq 2 yrs. of age. Adults who are immunocompetent and aged 65 years of age or older should receive 13-valent pneumococcal conjugate vaccine (PCV13) followed by 23-valent pneumococcal polysaccharide vaccine (PPSV23) at least 1 year after PCV 13.
Hepatitis B Vaccine	Initial	For unvaccinated adults with diabetes <60 years ASAP after diabetes diagnosis & should also be given to adults diagnosed with diabetes in the past. For unvaccinated adults with diabetes >60 years, vaccinate at discretion of health care provider.
COUNSELING AND RISK REDUCTION		
Alcohol and Tobacco Use	Annually/ Periodically	Assess alcohol use and smoking status, advise pts. to quit.
Psychosocial Adjustment	Annually/ Periodically	Suggest support groups/counsel Assess for depression or other mood disorder.
Sexual Functioning	Annually/ Periodically	Discuss function and therapy options with both male and female pts.
Preconception	Initial/ Periodically	Preconception counseling should address the importance of glycemic control as close to normal as is safely possible, ideally A1C <6.5% (48 mmol/mol) to reduce the risk of congenital anomalies. Evaluate medications. Statins, ACE, ARBs and most noninsulin therapies contraindicated prior to and during pregnancy.
Diabetes During Pregnancy	Initial/ Periodically	For pregnant women with type 1 or type 2 DM, an A1C of <6% is recommended if it can be achieved without excessive hypoglycemia. Evaluate medications. Statins, ACE, ARBs and most noninsulin therapies contraindicated prior to and during pregnancy. Comprehensive eye exam during 1st trimester. Refer to high risk program.
Aspirin Therapy	Periodically	Use aspirin therapy (75-162 mg/day) as a secondary prevention strategy in pts. with DM with a history of CVD.
Statin Therapy	Initial/ Periodically	In addition to lifestyle therapy: 1) all ages with diabetes and /ASCVD should use high intensity statin therapy, 2) 40 – 75 yrs. of age with diabetes, should use moderate intensity statin therapy, 3) >75 yrs. of age with diabetes, statin therapy should be individualized based on risk profile.
ACE Inhibitor/ARB	Periodically	An ACE inhibitor or angiotensin receptor blocker, at the maximum tolerated dose indicated for blood pressure treatment, is the recommended first-line treatment for hypertension in patients with diabetes and urinary albumin-to-creatinine ratio \geq 300 mg/g creatinine or 30-299 mg/g creatinine. If one class is not tolerated, the other should be substituted. Other agents may also be appropriate.

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REVIEW SELF-MANAGEMENT SKILLS		
Patient and Clinician Jointly Set Goals	Initial/every visit	Ongoing setting and monitoring of A1C, BP, and lipid goals. Support pts.' behavior change efforts including physical activity; healthy eating; tobacco avoidance; weight management; effective coping; medication management. Refer to DM self-management education (DSME) at diagnosis and as needed.
Physical Activity	Initial/ Periodically	Assess and prescribe based on patient's health status.
Nutrition	Initial/ Periodically	If BMI \geq 25, advise weight management. Asian-American adults of any age have a lower BMI threshold for risk than other ethnic groups with a BMI \geq 23. Assess for alcohol use. Recommend Medical Nutrition Therapy (MNT) as needed.
Medication Review/Adherence	Initial/ Periodically	Review current medications and adherence. Adjust medications as indicated to achieve target goals for glucose, BP, and lipids. Assess and address barriers to patient adherence.
Self-Monitoring Blood Glucose (SMBG)	Initial/ Periodically	Pt. to monitor glucose as necessary to minimize risk of hyper- and hypoglycemic episodes. Stable type 2 diabetics don't need daily testing. Ongoing assessment of cognitive function is suggested with increased vigilance for hypoglycemia by the clinician, patient, and caregivers if low cognition or declining cognition is found.

Diabetes Mellitus Flow Sheet

Record visit date at top of column, record test results and/or service date(s) in spaces below. Check (v) when item complete; mark with "C" if item is contraindicated; "D" if patient declined; "R" if referred.

Name: _____

ID/MRN: _____

DOB: _____ Sex: M F

Height: _____ Date Recorded: _____

Other _____

Care Clinicians: _____

EXAMINATION/TEST	FREQUENCY	VISIT DATE / /	VISIT DATE / /	VISIT DATE / /
Complete History and Physical Exam: (including risk factors, exercise, and diet hx)	Initial visit & annually at discretion of clinician	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Blood Pressure Goal: <140/90	Every visit	<input type="checkbox"/> BP: /	<input type="checkbox"/> BP: /	<input type="checkbox"/> BP: /
Weight & BMI Goal: BMI ≥18.5 and <25 Asian-American adults BMI ≥18.5 and <23	Every visit	<input type="checkbox"/> Wt.: <input type="checkbox"/> BMI:	<input type="checkbox"/> Wt.: <input type="checkbox"/> BMI:	<input type="checkbox"/> Wt.: <input type="checkbox"/> BMI:
Comprehensive Foot Exam Sensory/monofilament and Pulses	Annually	<input type="checkbox"/> Sensory/monofilmt <input type="checkbox"/> Pulses	<input type="checkbox"/> Sensory/monofilmt <input type="checkbox"/> Pulses	<input type="checkbox"/> Sensory/monofilmt <input type="checkbox"/> Pulses
Visual Inspection of Feet	Every visit	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Dilated Retinal Exam	Annually/Biannually*	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Dental	Every six months	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
A1C: General Goal: <7.0*	Two to four times yearly*	<input type="checkbox"/> A1C:	<input type="checkbox"/> A1C:	<input type="checkbox"/> A1C:
Fasting Lipid Profile	At the discretion of the physician based on CVD risk*	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
(UACR)* .30 fĒg alb/mg creatinine is abnormal	At diagnosis and annually	<input type="checkbox"/> Ratio:	<input type="checkbox"/> Ratio:	<input type="checkbox"/> Ratio:
eGFR (Calculated from Serum Creatinine)*	Annually	<input type="checkbox"/> eGFR:	<input type="checkbox"/> eGFR:	<input type="checkbox"/> eGFR:
Flu Vaccine: October 1. March 31	Annually	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Pneumococcal Vaccine	Initial/Follow-up*	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Hepatitis B Vaccine	Initial			
Discuss High Risk Behaviors: Counsel on smoking cessation and alcohol use	Every visit: Smoking Alcohol	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Counseled	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Counseled	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Counseled
Psychosocial Adjustment: Screen for depression or other mood disorder	Annual/Periodically	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Discuss Sexual Functioning*	Annual/Periodically	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Discuss Preconception/Pregnancy : Many medications contraindicated*	Initial/Periodically*	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Diabetes Self-Management Education (DSME)	Initial visit and at clinician's discretion	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Self-Management Goal Assessment: Review patient's goals for self-management* including dietary needs, physical activity	Initial/Periodically	<input type="checkbox"/> Self-Mgmt. goal:	<input type="checkbox"/> Self-Mgmt. goal:	<input type="checkbox"/> Self-Mgmt. goal:
Medical Nutrition Therapy (MNT): Assess and refer as needed	Initial/Periodically	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Assessment of Hyper/Hypoglycemia: Review signs, symptoms and treatment. Review self-monitoring blood glucose record	Initial/Periodically	<input type="checkbox"/> SMBG	<input type="checkbox"/> SMBG	<input type="checkbox"/> SMBG
Review Current Medications and Medication Adherence*: Include all medications to control glucose, blood pressure and lipids, aspirin/anti-platelet agents; ACEIs/ARBs; insulin/oral hypoglycemic agents; statins/lipid control agents; over-the-counter, complementary and alternative medicine. Review/adjust medications as indicated to achieve target goals for glucose, blood pressure and lipids.	Initial/Periodically Check (v) box if currently prescribed Mark "C" if item contraindicated Mark "D" if patient declined Mark "A" if medication adjusted Mark "X" if medication stopped	<input type="checkbox"/> Insulin <input type="checkbox"/> Oral hypoglycemic <input type="checkbox"/> ACEI/ARB <input type="checkbox"/> Statin/lipid control <input type="checkbox"/> ASA/anti-platelet	<input type="checkbox"/> Insulin <input type="checkbox"/> Oral hypoglycemic <input type="checkbox"/> ACEI/ARB <input type="checkbox"/> Statin/lipid control <input type="checkbox"/> ASA/anti-platelet	<input type="checkbox"/> Insulin <input type="checkbox"/> Oral hypoglycemic <input type="checkbox"/> ACEI/ARB <input type="checkbox"/> Statin/lipid control <input type="checkbox"/> ASA/anti-platelet
Comments: (e.g. assessment of complications, adherence to plan, follow up, referrals, etc.)				
Signature/Initials				

*See Guideline Chart on page 3-4 for details and exclusions.

Adult Diabetes Care

Resources for Physicians

American Association of Diabetes Educators

Find a diabetes educator

Centers for Disease Control and Prevention

Diabetes Public Health Resources - tools, news and resources

Monroe County Medical Society Quality Collaborative Community-wide Guidelines

- Treating Tobacco Use and Dependence - Provides physicians and other clinicians with the evidence based tools necessary to systematically provide effective treatments in the outpatient setting.

National Institute of Diabetes and Digestive and Kidney Health

- UACR and eGFR Calculator – Quick reference on UACR and GFR

National Kidney Foundation

- Stages of Chronic Kidney Disease – Provides evidence-based clinical practice guidelines for all stages of chronic kidney disease.

New York State Department of Health Diabetes Prevention and Management Toolkit

Tools to help prevent and manage diabetes

Resources for Patients

American Diabetes Association

Professional online free resources

- Order free booklet: Where Do I Begin? Living with Type 2 Diabetes (available in English and Spanish; sample booklet available for viewing after page 7 of the Community-wide Adult Diabetes Care Guideline) – Provides patient information about living with type 2 diabetes and options to enroll in a free year-long program that offers monthly information and support for patients.

American Diabetes Association – Rochester Office

The ADA Rochester office is committed to educating the public about how to stop diabetes and support those living with the disease. Contact the ADA at (585) 458-3040.



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References

American Diabetes Association. Standards of Medical Care in Diabetes - 2019. January 2019 Volume 42. Supplement 1. Available from: <https://professional.diabetes.org/content-page/practice-guidelines-resources>

Centers for Disease Control and Prevention: Diabetes and Hepatitis B Vaccination
https://www.cdc.gov/diabetes/pubs/pdf/hepb_vaccination.pdf

Centers for Medicare & Medicaid Services (CMS) Physician Quality Reporting System (PQRS). Available from:
<http://www.cms.gov/Medicare/Quality-Initiatives-Patient-Assessment-Instruments/PQRS/index.html?redirect=/pqrs>

James P, Oparil S, Carter B, Cushman W, Dennison-Himmelfarb C, Handler J, et al. 2014 Evidence-Based Guideline for the Management of High Blood Pressure in Adults Report From the Panel Members Appointed to the Eighth Joint National Committee (JNC 8). JAMA. 2014;311(5):507-520. Available from: <http://jama.amanetwork.com/article.aspx?articleid=1791497>