Adult Diabetes Care

Purpose

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

Major Recommendations

- Educate patients on the ABC's of Diabetes Care (A1C, Blood Pressure, Cholesterol)
- A reasonable A1C goal for many nonpregnant adults is <7% (53 mmol/mol). (A)
- Less stringent A1C goals (such as < 8%) may be appropriate for patients with a history of severe hypoglycemia, limited life expectancy, advanced microvascular or macrovascular complications or extensive comorbid conditions. (B)
- In patients with known CVD, consider ACE inhibitor therapy (C) and use aspirin and statin therapy (A) (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. (B)
- Weight loss is recommended for all overweight or obese individuals who have or are at risk for diabetes (A) 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 <140 mmHg and a diastolic blood pressure goal of 90 mmHg. (A)
- For typical patients with Type 2 Diabetes ages 40-75, a moderate dose statin is recommended. (A) 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.

To Achieve These Goals:

- Individuals who have diabetes should receive individualized medical nutrition therapy (MNT), preferably provided by a registered dietitian. (A)
- People with diabetes should receive diabetes self-management education (DSME) and diabetes self-management support (DSMS). (B)
- 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. (A) 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. (C)
- Advise all patients not to smoke or use tobacco products. (A)
- 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. (B)
- 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. (A) If intolerant to statins, consider PCSK9 therapy. (E)
- Consider using moderate intensity statin therapy in addition to lifestyle therapy for patients with diabetes > 75 years old without overt CVD/ASCVD. (B).
- Metabolic surgery should be recommended to treat type 2 diabetes in appropriate surgical candidates with a BMI ≥40 kg/m^2 (BMI ≥37.5 kg/m^2 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/m^2 (32.5-37.4 kg/m^2 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. (A)

Adapted from the Guidelines for Adult Diabetes (DM) Care developed by the New York Diabetes Coalition in collaboration with the New York State Department of Health, Diabetes Prevention & Control Program.

Guidelines are intended to be flexible. They serve as reference points or recommendations, not rigid criteria. Guidelines should be followed in most cases, but there is an understanding that, depending on the patient, the setting, the circumstances, or other factors, care can and should be tailored to fit individual needs.

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- 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. (A) The value of continuous blood glucose monitoring is expanding and should be considered in appropriate patients.

Other Recommendations

- Either an ACE inhibitor or ARB (but not both in combination) is suggested for the treatment of the non-pregnant patient with modestly elevated urinary microalbumin excretion (30–299 mg/day) (B) and is recommended for those with urinary microalbumin excretion 300 mg/day. (A)*
- Optimize glucose and blood pressure control to reduce the risk or slow the progression of nephropathy and retinopathy. (A)
- 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. (B)
- 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. (B)
- 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. (A) 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. (A) If this does not succeed, real time blood glucose monitoring is advisable. (A)
- 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). (A) An ACE inhibitor or angiotension 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 (A) or 30-299 mg/g creatinine (B). If one class is not tolerated, the other should be substituted. (B)

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% (PQRS)
- 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) (PQRS)

High Risk Populations/Disparities

- Type 2 Diabetes develops more frequently in women with prior gestational diabetes meilitus 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. (A)

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EXAMINATION/TEST	FREQUENCY	GOAL RECOMMENDATION
HISTORY AND PHYSICAL		
Blood Pressure (BP) [1]	Every visit	<140/90 with individual adjustment to lower systolic BP target as appropriate.
Weight & BMI	Every visit	Healthy Weight = BMI ≥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[3]	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. [4]
Fasting Lipid Profile [1]	Annual CVD risk assesment[5]	At the discretion of the physician based on CVD risk.[5]
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 ≥5 yrs & in all patients with type 2 diabetes and in all patients with comorbid hypertension. (S88, 89)
IMMUNIZATIONS [8]		
Flu Vaccine	Annually	
Pneumococcal Vaccine	Initial/ Follow-up	Administer pneumococcal polysaccharide vaccine 23 (PPSV23) to all patients with diabetes ≥2 yrs of age. Adults who are immunocompetent and aged 65 years of age or order 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. *Source: CDC*
COUNSELING AND RISK REDUCTION		
Alcohol and Tobacco Use [1]	Annually/ Periodically	Assess alcohol use and smoking status, advise pts. to quit. See Resources on pg 5.
Psychosocial Adjustment	Annually/ Periodically	Suggest support groups/counsel Assess for depression or other mood disorder. See Resources on pg 5.
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. (S114). Evaluate medications. Statins, ACE, ARBs and most noninsulin therapies contraindicated prior to and during pregnancy. (S78)
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. (S78) Comprehensive eye exam during 1st trimester. (S61) 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. (S54, 55)
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. (S79, 80)
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 ≥300 mg/g creatinine or 30-299 mg/g creatinine. If one class is not tolerated, the other should be substituted. (S76) 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. (S33-34)
Physical Activity	Initial/ Periodically	Assess and prescribe based on pts.' health status.[10] (S37-38)
Nutrition	Initial/ Periodically	If BMI ≥ 25, advise weight management. Asian-American adults of any age have a lower BMI threshold for risk than other ethnic groups with a BMI ≥ 23. Assess for alcohol use. Recommend Medical Nutrition Therapy (MNT) as needed.[9] See Resources on page 5.
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.[11] 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. (S53-54)

See footnotes on page 7. Visit http://professional.diabetes.org/ResourcesForProfessionals.aspx?cid=84160 for full recommendations or specific citations (i.e.S33).

Diabetes Mellitus Flow Sheet

Record visit date at top of column, record test results and/or service date(s) in spaces below. Check (√) 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	☐	☐	☐
Blood Pressure Goal: <140/90	Every visit	☐ BP: /	☐ BP: /	☐ BP: /
Weight & BMI Goal: BMI ≥18.5 and <25 Asian-American adults BMI ≥18.5 and <23	Every visit	☐ Wgt: ☐ BMI:	☐ Wgt: ☐ BMI:	☐ Wgt: ☐ BMI:
Comprehensive Foot Exam Sensory/monofilament and Pulses	Annually	☐ Sensory/monoflmt ☐ Pulses	☐ Sensory/monoflmt ☐ Pulses	☐ Sensory/monoflmt ☐ Pulses
Visual Inspection of Feet	Every visit	☐	☐	☐
Dilated Retinal Exam	Annually/Biannually*	☐	☐	☐
Dental	Every six months	☐	☐	☐
A1C: General Goal: <7.0*	Two to four times yearly*	☐ A1C:	☐ A1C:	☐ A1C:
Fasting Lipid Profile	At the discretion of the physician based on CVD risk*	☐	☐	☐
(UACR)* .30 ƒÊg alb/mg creatinine is abnormal	At diagnosis and annually	☐ Ratio:	☐ Ratio:	☐ Ratio:
eGFR (Calculated from Serum Creatinine)*	Annually	☐ eGFR:	☐ eGFR:	☐ eGFR:
Flu Vaccine: October 1. March 31	Annually	☐	☐	☐
Pneumococcal Vaccine	Initial/Follow-up*	☐	☐	☐
Hepatitis B Vaccine	Initial			
Discuss High Risk Behaviors: Counsel on smoking cessation and alcohol use	Every visit: Smoking Alcohol	☐ Yes ☐ No ☐ Counseled ☐ Yes ☐ No ☐ Counseled	☐ Yes ☐ No ☐ Counseled ☐ Yes ☐ No ☐ Counseled	☐ Yes ☐ No ☐ Counseled ☐ Yes ☐ No ☐ Counseled
Psychosocial Adjustment: Screen for depression or other mood disorder	Annual/Periodically	☐	☐	☐
Discuss Sexual Functioning*	Annual/Periodically	☐	☐	☐
Discuss Preconception/Pregnancy : Many medications contraindicated*	Initial/Periodically*	☐	☐	☐
Diabetes Self-Management Education (DSME)	Initial visit and at clinician's discretion	☐	☐	☐
Self-Management Goal Assessment: Review patient's goals for self-management* including dietary needs, physical activity	Initial/Periodically	☐ Self-Mgmt. goal:	☐ Self-Mgmt. goal:	☐ Self-Mgmt. goal:
Medical Nutrition Therapy (MNT): Assess and refer as needed	Initial/Periodically	☐	☐	☐
Assessment of Hyper/Hypoglycemia: Review signs, symptoms and treatment. Review self-monitoring blood glucose record	Initial/Periodically	☐ ☐ SMBG	☐ ☐ SMBG	☐ ☐ 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 (√) box if currently prescribed Mark "C" if item contraindicated Mark "D" if patient declined Mark "A" if medication adjusted Mark "X" if medication stopped	☐ Insulin ☐ Oral hypoglycemic ☐ ACEI/ARB ☐ Statin/lipid control ☐ ASA/anti-platelet	☐ Insulin ☐ Oral hypoglycemic ☐ ACEI/ARB ☐ Statin/lipid control ☐ ASA/anti-platelet	☐ Insulin ☐ Oral hypoglycemic ☐ ACEI/ARB ☐ Statin/lipid control ☐ 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.

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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 Beth Smythe at 585-458-3040 or esmythe@diabetes.org

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Footnotes for Guideline Chart

1. Annual review of CVD risk factors.(S75)
2. Foot examination should include inspection, assessment of foot pulses, and testing for loss of protective sensation (LOPS) (10-g monofilament plus vibration testing, e.g. tuning fork). (S95-96)
3. Type 1: Within 5 yrs after onset, then annually. Type 2: Refer at time of diagnosis, then annually. ADA recommends ophthalmologist or optometrist. Fundus photography may serve as a screening tool for retinopathy, but is not a substitute for a comprehensive eye exam. (S91-93)
4. At least 2x a year in pts. who are meeting treatment goals. Quarterly in pts. whose therapy has changed or who are not meeting glycemic goals. (S49) See Summary of Glycemic Recommendations Table 6.2. (S52)
5. 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. (S79-80)
6. Type 1: Annual with DM duration ≥ 5 years; Type 2: Annual, starting at diagnosis. (S88-89)
7. When the eGFR is less than <60 ml/min per 1.73 m^2, screening for complications of chronic kidney disease is indicated. Consider referral to a physician experienced in the care of kidney disease when there is uncertainty about the etiology of kidney disease. (S89-90)
8. Administer pneumococcal and hepatitis B vaccinations to adults with diabetes as per Centers for Disease Control and Prevention (CDC) recommendations. (S26)
9. To locate a Certified Diabetes Educator (www.diabeteseducator.org) or Registered Dietitian (www.eatright.org).
10. Advise physical activity at least 150 min/week of moderate-intensity aerobic activity including resistance training 3x's week. All individuals, including those with diabetes, should be encouraged to reduce the amount of time they spend being sedentary, particularly by breaking up extended amount of time (> 90 min.) sitting. (S37-38)
11. Recommend postprandial testing (goal <180 mg/dl) when A1C levels are not optimal but pre-meal targets are being met. (S52)

References

American Diabetes Association. Standards of Medical Care in Diabetes - 2017. Diabetes Care. 2017 Jan; vol. 40 Supplement 1 S1-S135. Available from: http://professional.diabetes.org/sites/professional.diabetes.org/files/media/dc_40_s1_final.pdf

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) Meaningful Use Quality Measure. Available from: http://www.cms.gov/Regulations-and-Guidance/Legislation/EHRIncentivePrograms/index.html?redirect=/EHRIncentivePrograms/

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

Diabetes.org [Internet]. Alexandria. American Diabetes Association; c 1995-2013. Available from: http://www.diabetes.org/living-with-diabetes/treatment-and-care/high-risk-populations/treatment-african-americans.html; http://www.diabetes.org/in-my-community/awareness-programs/latino-programs/?loc=lwd-slabnav; http://www.diabetes.org/in-my-community/awareness-programs/older-adults/?loc=imc-slabnav; http://www.diabetes.org/living-with-diabetes/treatment-and-care/women/women-and-diabetes-frequently-asked-questions-faqwomen-and-diabetes.html

Ian Brissette I, Mills T, Ruberto R, Spence, M. Adult Diabetes Prevalence in New York State. New York State Department of Health. 2011 Oct. Available from: http://www.health.ny.gov/diseases/conditions/diabetes/docs/adult_diabetes_prevalence.pdf

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.jamanetwork.com/article.aspx?articleid=1791497