



# CLINICAL PRACTICE GUIDELINES AND RECOMMENDATIONS FOR ADULT DIABETES CARE 2010

		Frequency	Comments
<b>History, Physical Examination &amp; Laboratory (screening &amp; diagnostic)</b>	Blood Pressure and Weight	Every 3-6 months	Treat to a systolic BP <130 mmHg target; to a diastolic BP < 80 mmHg target.
	Dilated eye exam	Annually	Refer to ophthalmologist or optometrist
	Foot Exam	Every routine visit	Visual exam without shoes or socks; refer as indicated Note: All patients should be screened for distal symmetric polyneuropathy (DPN) at diagnosis and at least annually. Once diagnosis of DPN is established, special foot care is appropriate.
	Comprehensive lower extremity sensory exam	Initial/annually	Teach protective foot behavior if sensation diminished. Refer to podiatrist if indicated
	Dental exam	Every 6 months	Refer to Dentist
	Cardiovascular exam	Annually	Refer to cardiologist for further evaluation as indicated
	Depression assessment	Annually	Assess for depression with Patient Health Questionnaire-9 (PHQ-9); alternatively screen for depression verbally and if positive, use PHQ-9
	Screening to detect Pre-Diabetes ( <i>IFG or Impaired Fasting Glucose; IGT or Impaired Glucose Tolerance</i> )	As indicated/repeat testing should be carried out at least at 3-year intervals.	Should be considered for: <ul style="list-style-type: none"> <li>• Asymptomatic adults of any age who are overweight or obese and have additional risk factors for diabetes.</li> <li>• In those without a risk factor, testing should begin at age 45.</li> </ul> Note: for this purpose, this recommendation would apply particularly to those with a BMI $\geq 25$ kg/m <sup>2</sup> if they have another risk factor for diabetes, e.g., habitually physically inactive, have first-degree relative with diabetes, are members of high-risk ethnic population, have delivered a baby weighing >9 lbs or have been diagnosed with gestational diabetes, are hypertensive, have HDL cholesterol level <35 mg/dl (0.90 mmol/l) and/or a triglyceride level >250 mg/dl (2.82 mmol/l), have a clinical condition associated with insulin resistance, have history of vascular disease, or A1C $\geq 5.7\%$ , IGT, or IFG on previous testing.
	<i>Screening to Detect type 2 Diabetes in Children</i>	As indicated, starting at age 10 or at onset of puberty, if puberty occurs at a younger age; should be repeated every 3 years.	Should be considered for: <ul style="list-style-type: none"> <li>• Overweight (BMI &gt;85<sup>th</sup> percentile for age and sex, weight for height &gt;85<sup>th</sup> percentile, or weight &gt;120% of ideal for height) <b>plus</b> any TWO of following risk factors: family history of type 2 diabetes in first- or second-degree relative, member of high-risk ethnic population, maternal history of diabetes or gestational diabetes during the child's gestation, or signs of insulin resistance or of a clinical condition associated with insulin resistance, including small-for-gestational-age birth weight. FPG is the preferred test.</li> </ul>

Reference: "Standards of Medical Care in Diabetes," DIABETES CARE, Volume 33, Supplement 1, January 2010  
American Diabetes Association

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	<p><i>Screening Criteria for Pre-Diabetes or Diagnosis of Diabetes</i> Fasting/Random plasma glucose <i>[Diagnosis must be confirmed for diagnosis of diabetes]</i></p>	As indicated/annually for those with pre-diabetes	<p>Note: To test for pre-diabetes or diabetes, either a FPG test or a 2-hr oral glucose tolerance test (OGTT; 75g. glucose load), or both, is appropriate.</p> <ul style="list-style-type: none"> <li>• Symptoms of diabetes and a casual plasma glucose <math>\geq 200</math> mg/dl (11.1 mmol/l).</li> <li>• Fasting plasma glucose (FPG) <math>\geq 126</math> mg/dl (7.0 mmol/l). Fasting is defined as no caloric intake for at least 8 hours.</li> <li>• 2-hr plasma glucose (PG) <math>\geq 200</math> mg/dl (11.1 mmol/l) during an oral glucose tolerance test (OGTT). The test should be performed as described by the World Health Organization (WHO), using a glucose load containing the equivalent of 75-g anhydrous glucose dissolved in water.</li> </ul>																		
	Diagnosis of Gestational DM with a 100-g OGTT glucose load	As indicated/Note: Women with GDM should be screened for diabetes 6-12 weeks postpartum and should be followed up with subsequent screening for the development of diabetes or pre-diabetes.	<table border="1" data-bbox="938 489 1562 768"> <thead> <tr> <th></th> <th>mg/dl</th> <th>Mmol/l</th> </tr> </thead> <tbody> <tr> <td>100-g Glucose load</td> <td></td> <td></td> </tr> <tr> <td>Fasting</td> <td><math>\geq 95</math></td> <td>5.3</td> </tr> <tr> <td>1-hr</td> <td><math>\geq 180</math></td> <td>10.0</td> </tr> <tr> <td>2-hr</td> <td><math>\geq 155</math></td> <td>8.3</td> </tr> <tr> <td>3-hr</td> <td><math>\geq 140</math></td> <td>7.8</td> </tr> </tbody> </table>		mg/dl	Mmol/l	100-g Glucose load			Fasting	$\geq 95$	5.3	1-hr	$\geq 180$	10.0	2-hr	$\geq 155$	8.3	3-hr	$\geq 140$	7.8
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	HbA1c	Every 3-6 months	<ul style="list-style-type: none"> <li>• Goal for patients in general is <b>&lt;6.5%</b> (referenced to a nondiabetic range of 4.0-6.0% using DCCT-based assay)</li> <li>• Goal for the individual patient is as close to normal (&lt;6.0%) as possible without significant hypoglycemia.</li> </ul> <p>Note: more stringent control (&lt;6%) may further reduce complications at increased risk of hypoglycemia; less stringent treatment goals may be appropriate for patients with severe or frequent hypoglycemia, patients with limited life expectancies, very young children or older adults, and individuals with comorbid conditions.</p>																		
	FPG and OGTT values (Reference Guide)		<ul style="list-style-type: none"> <li>• FPG &lt;100 mg/dl (5.6 mmol/l) = normal fasting glucose</li> <li>• FPG <math>\geq 100</math> mg/dl (5.6 mmol/l) and &lt;126 mg/dl (6.9 mmol/l) = impaired fasting glucose (IFG)</li> <li>• 2-hr plasma glucose 140 mg/dl (7.8 mmol/l) to 199 mg/dl (11.0 mmol/l) = impaired glucose tolerance (IGT)</li> </ul> <p>Note: IFG and IGT have been officially termed “pre-diabetes.” Both categories are risk factors for future diabetes and cardiovascular disease.</p>																		
	Fasting lipid profile	Annually	<p>Treatment goals are: LDL &lt; 100 mg/dl (2.6 mmol/l); triglycerides &lt;150 mg/dl (1.7 mmol/l) and HDL &gt;40 mg/dl (1.1 mmol/l) [for women, increase HDL goal by 10 mg/dl].</p> <ul style="list-style-type: none"> <li>• In individuals with diabetes aged &gt;40 years with total cholesterol <math>\geq 135</math> mg/dl, <i>without</i> overt cardiovascular disease, statin therapy to achieve an LDL reduction of 30-40% regardless of baseline level.</li> <li>• For persons with diabetes <math>\leq 40</math> years, <i>without</i> overt cardiovascular disease, but at increased risk due to other factors or long duration of diabetes, the addition of pharmacological therapy is appropriate.</li> <li>• Those with diabetes <i>and</i> overt cardiovascular disease are at very high risk and should be treated with a statin drug. A lower LDL goal of &lt;70 mg/dl (1.8 mmol/l), using a high dose of a statin, is an option in these patients.</li> </ul>																		

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	Urinalysis	Annually	
	Urine microalbumin/creatinine	Annually	Measurement of albumin to creatinine ratio in random collection, or 24 hour with creatinine (simultaneous creatinine clearance), or timed, e.g., 4 hrs or overnight.
	Serum creatinine	Initial/annually	The serum creatinine alone should not be used as a measure of kidney function but rather used to estimate GFR and stage the level of chronic kidney disease.
	EKG	Initial	If patient is $\geq 40$ yrs old or DM $\geq 10$ years or clinically indicated.
	Thyroid assessment	Initial/as indicated	Thyroid palpation, thyroid functions test(s) if indicated
<b>Management (diabetics and pre-diabetics, as applicable)</b>	Review self-management skills	Initial/ongoing	Check self-monitoring log book, diet, exercise, and meds. Refer for diabetes self-management training if indicated.
	Glucose monitoring	Initial/ongoing	<ul style="list-style-type: none"> <li>● Self-monitoring of glucose (SMBG) should be carried out three or more times daily for those using multiple insulin injections or insulin pump therapy.</li> <li>● When prescribing SMBG, ensure that patients receive initial instruction in, and routine follow-up evaluation of, SMBG technique and their ability to use data to adjust therapy.</li> <li>● Continuous glucose monitoring (CGM) in conjunction with intensive insulin regimens can be a useful tool to lower A1C in selected adults (age <math>&gt;25</math> years) with type 1 diabetes.</li> <li>● Although evidence for A1C lowering is less strong in children, teens, and younger adults, CGM may be helpful in these groups.</li> </ul>
	Glycemic goals in adults	Initial/ongoing	<ul style="list-style-type: none"> <li>● Lowering A1C to <math>&lt;7\%</math> has been shown to reduce microvascular and nephropathic complications of type 1 and type 2 diabetes.</li> <li>● Less stringent A1C goals than the general goal of <math>&lt;7\%</math> may be appropriate for patient with a history of severe hypoglycemia, limited life expectancy, advanced microvascular or macrovascular complications, or extensive comorbid conditions and those with longstanding diabetes in whom the general goal is difficult to attain despite diabetes self-management education, appropriate glucose monitoring, and effective doses of multiple glucose-lowering agents including insulin.</li> </ul>

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Establish/Review nutrition plan	Initial/ongoing	<p>Refer to medical nutrition therapy if indicated.</p> <ul style="list-style-type: none"> <li>• Those with impaired glucose tolerance or impaired fasting glucose or an A1C of 5.7-6.4% should be referred for a program aimed at reducing weight by 5-10%.</li> <li>• Bariatric surgery should be considered for adults with BMI <math>\geq 35</math> kg/m<sup>2</sup> and type 2 diabetes, especially if the diabetes is difficult to control with lifestyle and pharmacologic therapy. Note: Long-term benefits, cost-effectiveness, and risks of bariatric surgery in individuals with type 2 diabetes have not been studied in well-designed randomized clinical trials with medical and lifestyle therapy as the comparator.</li> <li>• Reduction of protein intake to 0.8-1.0 g/kg body weight in individuals with diabetes and the earlier stages of chronic kidney disease (CKD) and to 0.8 g/kg body weight per day in later stages of CKD may improve measures of renal function.</li> </ul>
Review physical activity plan	Initial/ongoing	<ul style="list-style-type: none"> <li>• At least 150 min/week of moderate-intensity aerobic physical activity (50-70% of maximum heart rate) and/or at least 90 min/week of vigorous aerobic exercise (&gt;70% of maximum heart rate).</li> </ul>
Prevention/delay of type 2 diabetes:	Initial/ongoing	<ul style="list-style-type: none"> <li>• In addition to lifestyle counseling, metformin may be considered in those who are at very high risk (combined impaired fasting glucose and impaired glucose tolerance plus other risk factors) and who are obese and under 60 years of age.</li> </ul>
Immunizations <ul style="list-style-type: none"> <li>• Influenza Vaccine</li> <li>• Pneumococcal Vaccine</li> </ul>	Annually Recommended	<ul style="list-style-type: none"> <li>• Provide at least one lifetime pneumococcal vaccine for adults with diabetes. A one-time revaccination recommended for individuals <math>\geq 65</math> years of age previously immunized when <math>&lt; 65</math> if administered <math>\geq 5</math> years ago.</li> </ul>
Counseling <ul style="list-style-type: none"> <li>• Tobacco use</li> <li>• Psychosocial adjustment</li> <li>• Sexuality/impotence</li> <li>• Preconception/pregnancy</li> <li>• Aspirin therapy</li> </ul>	Annually/ongoing Annually/ongoing  Ongoing, as indicated	Smoking cessation counseling   Use aspirin therapy (75-162 mg/day) or alternative antiplatelet agent for those at increased cardiovascular risk.

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