



City Health Information

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The New York City Department of Health and Mental Hygiene

Vol. 22 No. 3

DIABETES PREVENTION AND MANAGEMENT

NYC DOHMH ADULT DIABETES CLINICAL PRACTICE RECOMMENDATIONS

CLINICAL CARE PRIORITIES: THE ABC'S OF DIABETES

Measure	Frequency of Monitoring	Goal
A1C	Every 3–6 months	< 7.0%
Blood pressure	Every visit	< 130/80
Cholesterol (LDL)	Annually	< 100 mg/dL
Smoking status	Every visit	Prevention and cessation

Diabetes is epidemic throughout the US. In New York City, the prevalence has doubled in the past 8 years. Approximately 1 in 5 New Yorkers 65 years of age and older have diabetes.¹

Diabetes is a leading cause of hospitalization and death. Persons with diabetes have a 2–6 times greater risk of death from cardiovascular events than persons without diabetes. Nationally, the annual cost of caring for persons with diabetes is estimated to be \$132 billion—1 in 10 health care dollars.²

Overweight and obesity greatly increase the risk of diabetes. Eighty percent of adults in New York City with diabetes are overweight. In the US, epidemics of both obesity and type 2 diabetes are emerging in both children and adolescents.³ The national prevalence of overweight among children and adolescents has reached 14%, and among certain ethnic populations is as high as 30%.^{4,5} Type 2 diabetes now accounts for 8–45% of new cases of childhood diabetes.⁶ There is also an increase in adult New Yorkers under the age of 40 who have diabetes, particularly Hispanics. In this age group, the prevalence in Hispanics is 3%, twice that of African-Americans and 4 times that of non-Hispanic whites and Asians.

On average, diabetes is present 4–7 years before being diagnosed.⁷ At the time of diagnosis, approximately half of all persons with the disease are already experiencing complications.⁷ It is estimated that 1 in 3 Americans with diabetes is undiagnosed.⁷

Gestational diabetes (GDM) complicates approximately 7% of all pregnancies and is seen in 14% of pregnancies among certain ethnic groups (e.g., Hispanic, African-American, and Native-American).⁸

Half of all women with GDM progress to diabetes, usually type 2, within 10 years.⁸ Offspring of women with GDM are at increased risk for obesity, glucose intolerance, and diabetes in late adolescence and young adulthood.

There are significant neighborhood and racial/ethnic disparities in diabetes prevalence. East Harlem has the highest prevalence in New York City (15%); 7½ times that of the Upper East Side (2.0%). Other neighborhoods with high prevalence (10–15%) include Bushwick, Bedford-Stuyvesant, Washington Heights, and the South Bronx. Hispanic (12%) and African-American (11%) adult New Yorkers are more likely to have diabetes than non-Hispanic whites or Asians (< 7%).¹

PREVENTING DIABETES

Recently, persons at high risk for developing diabetes have been described as having pre-diabetes. Pre-diabetes is defined as either impaired fasting glucose or impaired glucose tolerance. Without lifestyle modification, most individuals with pre-diabetes will develop diabetes within 10 years.⁹ Persons with pre-diabetes are also at a 50% greater risk of developing heart attack or stroke than are persons without pre-diabetes.¹⁰ There is strong evidence that overweight persons with pre-diabetes can reduce their risk of developing diabetes by up to 60% with modest increases in physical activity and reduction in weight.^{9,11} Lifestyle modification is more effective at preventing or delaying diabetes than drug therapy with metformin.⁹ For every 7 persons with pre-diabetes who engage in 30 minutes of physical activity 5 days each week and reduce their weight by 5%, 1 case of diabetes is prevented.

PREVENTING DIABETES-ASSOCIATED COMPLICATIONS

Stopping smoking and controlling the **ABC'S** of diabetes (hemoglobin **A**1C, **B**lood pressure, **C**holesterol, **S**moking status) can significantly improve the quality of life and rates of illness and death in persons with diabetes. Intensive glycemic control in persons with type 1 diabetes reduces retinopathy, nephropathy, and neuropathy by 54–76%.¹² Persons with type 2 diabetes who adhere to intensive blood pressure control significantly reduce their risk of microvascular complications, visual loss, stroke, heart failure, and diabetes-related death.¹³ Intervention aimed at intensive control of blood glucose (A1C), blood pressure, and cholesterol reduces, by approximately 50%, the risk of cardiovascular and microvascular events in patients with type 2 diabetes and microalbuminuria (a strong predictor of cardiovascular risk).¹⁴ Optimally treating 5 people who have type 2 diabetes and microalbuminuria will prevent 1 cardiovascular event. Studies suggest that aspirin therapy, angiotensin-converting enzyme (ACE) inhibition, and moderate use of alcohol also reduce cardiovascular risk.^{15,16}

Caring for patients with diabetes involves a team approach, including physicians, nurses, diabetes educators, pharmacists, nutritionists, podiatrists, mental health professionals, exercise specialists, and the patient.

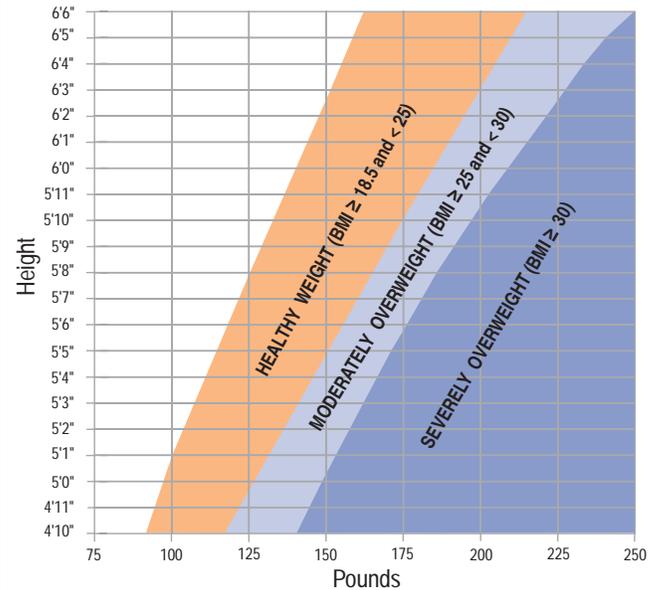
Clinicians can address the diabetes epidemic by identifying and effectively counseling high-risk patients and by treating diabetes and its complications aggressively.

TABLE 1. CORRELATION BETWEEN A1C AND MEAN PLASMA GLUCOSE LEVELS

A1C (%)	Mean Plasma Glucose (mg/dL)
6.0	135
7.0	170
8.0	205
9.0	240
10.0	275
11.0	310
12.0	345

Adapted with permission from the American Diabetes Association. Standards of medical care for patients with diabetes mellitus. *Diabetes Care*. 2003;26:33–50.

TABLE 2. HEALTHY WEIGHT GUIDELINES



To calculate BMI visit <http://nhlbisupport.com/bmi/>

Adapted with permission from Willett WC. *Eat, Drink, and Be Healthy: The Harvard Medical School Guide to Healthy Eating*. New York, NY: Simon and Schuster; 2002.

TABLE 3. GLYCEMIC CONTROL FOR NON-PREGNANT ADULTS WITH DIABETES

A1C	< 7.0%
Preprandial plasma glucose	90–130 mg/dL
Peak postprandial plasma glucose	< 180 mg/dL

Key concepts for setting optimal glycemic goals:

- Goals are tailored to meet a patient's individual needs.
- Certain populations, such as children, pregnant women, and the elderly, warrant special consideration.
- Patients with severe or frequent hypoglycemia may warrant less intensive glycemic control.
- Intensive glycemic goals may reduce microvascular complications but at the cost of increased risk of hypoglycemia.
- If preprandial glucose goals have been met, but A1C goals have not, consider altering postprandial glucose goals.

Adapted with permission from the American Diabetes Association. Standards of medical care for patients with diabetes mellitus. *Diabetes Care*. 2003;26:33–50.

**TABLE 4. GESTATIONAL DIABETES:
SCREENING AND DIAGNOSIS**

**Screening for Gestational Diabetes (GDM):
Risk assessment should begin at the first prenatal visit.**

High risk: Women with a personal history of GDM or an obstetric outcome indicative of GDM, a strong family history of diabetes, marked obesity, or glycosuria should be screened as soon as feasible. If they are found not to have GDM, they should be re-screened at 24–28 weeks of gestation.

Average risk: Women > 25 years of age, not considered to be at high-risk, should be screened at 24–28 weeks of gestation.

Low risk: Women who have ALL of the following characteristics do not need to be screened: being < 25 years of age, normal weight before pregnancy, member of an ethnic group with low prevalence of GDM, no known history of diabetes in first-degree relatives, no history of abnormal glucose tolerance, and no history of poor obstetric outcome.

Diagnosis of GDM is made with a 1-step or 2-step approach.

1-step approach: Perform a diagnostic oral glucose tolerance test (OGTT) without prior glucose screening. This may be cost-effective in high-risk patients or populations.

2-step approach: Perform an initial screening with the 1-hour 50-g oral glucose load using a glucose challenge test (GCT). Perform a diagnostic OGTT on women exceeding a glucose threshold of 140 mg/dL (80% sensitivity) or 130 mg/dL (90% sensitivity) for the GCT at 1 hour.

Diagnosis of GDM with a 100-g OGTT

Fasting	≥ 95 mg/dL
1-h	≥ 180 mg/dL
2-h	≥ 155 mg/dL
3-h	≥ 140 mg/dL

Two or more of the above 100-g OGTT values must be met for a positive diagnosis of GDM. The test should be done in the morning after an 8–14 hour fast.

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NATIONAL DIABETES STUDIES CURRENTLY RECRUITING PARTICIPANTS IN NEW YORK CITY

Diabetes Prevention Studies

DREAM

Diabetes Reduction Approaches with Ramipril and Rosiglitazone Medications

The aim of this study is to determine if the drugs ramipril and/or rosiglitazone can prevent type 2 diabetes in persons at high risk with impaired glucose tolerance.

(212) 305-6357

www.dream-ctn.org

TRIGR

Trial to Reduce Insulin-Dependent Diabetes in the Genetically at Risk

The aim of this trial is to determine if a diet free of complex proteins within the first 6 months of life will reduce the risk of type 1 diabetes in persons at high-risk genetically for diabetes.

(212) 851-5425

www.TRIGR.org

Diabetes Management Studies

ACCORD

Action to Control Cardiovascular Risk in Diabetes

The aim of this study is to determine the best approach to lowering the risk of heart disease and stroke by controlling blood sugar, blood pressure, and cholesterol in adults with type 2 diabetes.

(212) 305-6357

www.accord-ne.org

BARI 2D

Bypass Angioplasty Revascularization Investigation in Type 2 Diabetes

The aim of this study is to determine if immediate coronary revascularization vs. delayed or no revascularization improves the 5-year survival in patients with type 2 diabetes, coronary stenoses, and stable angina who are simultaneously given optimal medical care.

Local (212) 241-8901 National (412) 624-4300

www.BARI2D.org

LOOK AHEAD

Action for Health in Diabetes

The aim of this study is to assess the long-term effects of weight loss, especially on heart attack and stroke incidence, in both men and women who are overweight and have type 2 diabetes.

(212) 523-8037

www.lookaheadstudy.org

RESOURCES

National

American Association of Diabetes Educators (800) Team-Up-4
(800) 832-6874
www.aadenet.org

American Diabetes Association (800) DIABETES
(800)-3-422-3837
www.diabetes.org

American Dietetic Association (800) 366-1655
www.eatright.org

Centers for Disease Control and Prevention
Division of Diabetes Translation (877) 232-3422
www.cdc.gov/diabetes

National Diabetes Education Program (800) 438-5383
www.ndep.nih.gov

National Institute of Diabetes and Digestive and Kidney Diseases
National Diabetes Information Clearinghouse (800) 860-8747
www.niddk.nih.gov

Juvenile Diabetes Research
Foundation International (800) JDF-CURE
(800) 533-2873
www.jdf.org

State

New York State Diabetes Prevention
and Control Program (518) 474-1222
www.cdc.gov/diabetes/states

Local

New York City Department of Health and Mental Hygiene
Diabetes Prevention and Control Program (212) 676-2165
www.nyc.gov/health

Greater New York City Area American
Diabetes Association (888) DIABETES
(888)-3-422-3837
www.diabetes.org



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DIABETES PREVENTION AND MANAGEMENT

SCREENING FOR DIABETES IN THE CLINICAL SETTING

Screening for Diabetes in Asymptomatic Adults

Consider screening all adults 45 years of age and older, especially if they are overweight, have hypertension, or dyslipidemia, with a fasting plasma glucose (preferred initial screening test) or Oral Glucose Tolerance Test (OGTT). If test results are normal, repeat testing in 3 years.

Consider screening adults < 45 years of age if they are overweight and have the following additional risk factors for diabetes:

- Pre-diabetes (impaired fasting glucose or impaired glucose tolerance)
- BMI \geq 25 kg/m²
- Physical inactivity
- Family history of a first-degree relative with diabetes
- High-risk ethnicity, including African-American, Hispanic, Native-American, Asian-American, Pacific Islander
- Hypertension (BP \geq 140/90 mm Hg)
- HDL \leq 35 mg/dL and/or triglycerides \geq 250 mg/dL
- Polycystic ovary syndrome (PCOS)
- History of delivering a baby weighing > 9 lbs or diagnosis with GDM
- Clinical conditions associated with insulin resistance (PCOS or acanthosis nigricans)
- History of vascular disease.

Blood glucose testing to screen for diabetes is **NOT** recommended outside of the clinical care setting (e.g., health fairs).

Screening for Type 2 Diabetes in Children and Adolescents

Consider screening if **both** of the following criteria are met:

1. Overweight by 1 of the following criteria:

- BMI for age and sex \geq 85th percentile
- Weight for height \geq 85th percentile
- Weight > 120% of ideal weight for height.

CDC growth charts to assess obesity in children are available at www.cdc.gov/growthcharts/

2. Having any 2 of the following risk factors:

- A family history of type 2 diabetes in a first- or second-degree relative
- Being of a race/ethnicity at high risk for diabetes (e.g., African-American, Hispanic, Native-American, Asian-American, Pacific Islander)
- Clinical condition associated with insulin resistance (PCOS, acanthosis nigricans, hypertension, dyslipidemia).

When to Start Screening: Start to screen either at 10 years of age or at the onset of puberty, if puberty occurs when the child is < 10 years of age.

How to Screen: Screen every 2 years with a fasting plasma glucose test.

For high-risk persons who do not meet these criteria, use clinical judgment to determine if they should be screened.

Adapted with permission from the American Diabetes Association. Standards of medical care for patients with diabetes mellitus. *Diabetes Care*. 2003;26:33-50.

DIAGNOSING DIABETES

	Pre-Diabetes	Diabetes
Fasting Plasma Glucose	100-125 mg/dL (Impaired fasting glucose)	\geq 126 mg/dL
75-g Oral Glucose Tolerance Test (OGTT), 2 hour	140-199 mg/dL (Impaired glucose tolerance)	\geq 200 mg/dL
Random Plasma Glucose	No Criterion	\geq 200 mg/dL, and symptoms of diabetes (e.g., polyuria, polydipsia, unexplained weight loss)

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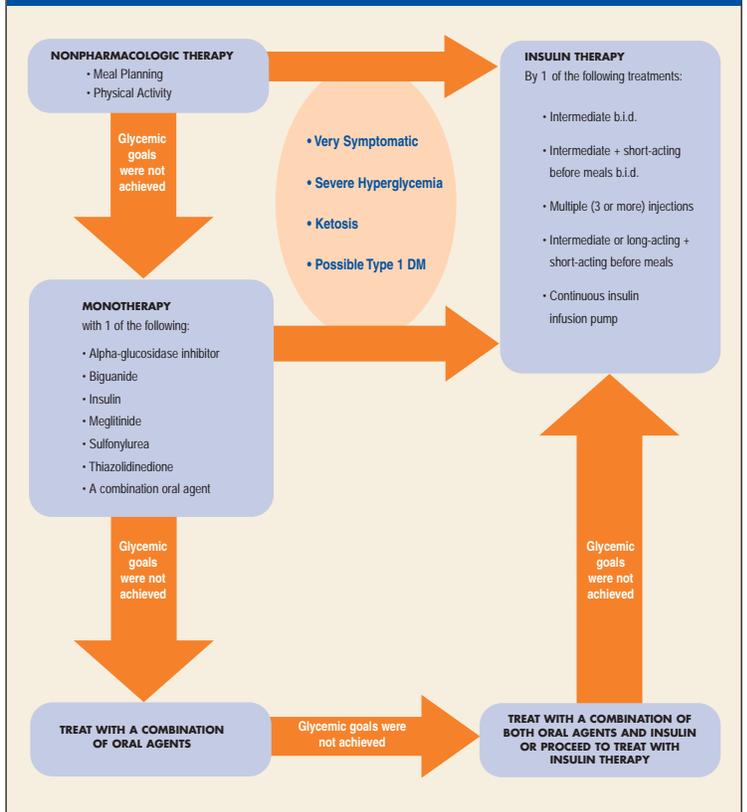
NYC DOHMH ADULT DIABETES CLINICAL PRACTICE RECOMMENDATIONS

CLINICAL CARE PRIORITIES		
Measure	Frequency of Monitoring	Goal
A1C	Every 3-6 months	< 7.0%
Blood pressure	Every visit	< 130/80
Cholesterol (LDL)	Annually	< 100 mg/dL
Smoking status	Every visit	Prevention and cessation
STANDARDS OF CARE		
History and Physical	Frequency	Goal
Blood pressure	Every visit	< 130/80
Weight and BMI (Table 2)	Every visit	Individualize
Dilated retinal exam	Annually	Retinopathy prevention
Comprehensive foot exam	Annually or every visit for high-risk patients	Lower extremity amputation prevention
Laboratory Analysis	Frequency	Goal
A1C	Every 3-6 months	< 7.0%
Fasting lipid profile	Annually	
LDL		< 100 mg/dL
Triglycerides		< 150 mg/dL
HDL		> 40 mg/dL in men; > 50 mg/dL in women
Total		< 200 mg/dL
Urine albumin-to-creatinine ratio (spot sample)	Annually, to screen for microalbuminuria	< 30 μ g/mg
ECG	Baseline, as clinically indicated	
Vaccination	Recommendation	
Influenza	Annually	
Pneumococcus	Once, but revaccinate if patients are currently \geq 65 years of age and were vaccinated when < 65 years of age and if 5 years have elapsed	
Counseling and Risk Reduction	Recommendation	
Smoking status	Assess tobacco use in all patients at every visit and advise patients NOT to smoke. Provide smoking cessation treatment (www.nyc.gov/html/doh/pdf/ch121-6.pdf)	
Aspirin therapy	75-325 mg/day in all patients with macrovascular disease and all patients \geq 40 years of age with 1 or more cardiovascular risk factor(s)	
ACE inhibition	Treatment for HTN or microalbuminuria. Consider using in patients who are > 55 years of age and do not have HTN or microalbuminuria but do have 1 or more other cardiovascular risk factor(s)	
Dental care	Refer for annual dental care	
Sexual functioning	Ask both female and male patients if they are experiencing sexual dysfunction and discuss therapy options	
Depression	Screen using the Prime-MD 2-question Depression Screen below: ¹⁷ During the past month, have you often been bothered by feeling down, depressed, or hopeless? During the past month, have you often been bothered by little interest or pleasure in doing things?	
Preconception counseling and pregnancy care	Optimize glucose control both before and during pregnancy. Consider referring patients to a high-risk perinatal program.	
Self-Management	Goals (to be set jointly by the clinician and the patient)	
Physical activity	30 minutes of moderate to vigorous physical activity at least 5 days a week	
Nutrition	Advise a diet of low saturated and trans fats and high fiber (http://care.diabetesjournals.org/cgi/content/full/26/suppl_1/s51)	
Weight management	For overweight patients (BMI \geq 25 kg/m ²), advise a 10% weight reduction at a rate of 1-2 lbs per week.	
Self blood glucose monitoring	Teach technique; agree on how frequently it should be used and the actions to take if blood sugar is too high or too low	
Self foot exam	Teach technique; and evaluate how the patient performs exam	

Adapted with permission from the American Diabetes Association. Standards of medical care for patients with diabetes mellitus. *Diabetes Care*. 2003;26:33-50.

1. Adults with diabetes should receive all immunizations recommended by the Advisory Committee on Immunization Practices (ACIP); for more information, visit www.cdc.gov/nip/publications/ACIP-list.htm
2. Women who do not intend to become pregnant can use all methods of contraception safely. For more information, visit www.nyc.gov/html/doh/pdf/ch121-2t.pdf
3. For more comprehensive nutrition recommendations, visit http://care.diabetesjournals.org/cgi/content/full/26/suppl_1/s51

MANAGING TYPE 2 DIABETES IN NON-PREGNANT ADULTS



Adapted with permission from the American Diabetes Association. 2002 *Clinical Practice Recommendations Pocket Guide*. ADA; 2002.

DIABETES MEDICATIONS

ORAL AGENTS	USUAL DAILY DOSE	COST/MONTH		
ALPHA-GLUCOSIDASE INHIBITORS				
Acarbose - <i>Precose</i> [*]	50-100 mg t.i.d. with meals	\$53.10		
Miglitol - <i>Glyset</i> [*]	50-100 mg t.i.d. with meals	\$57.60		
BIGUANIDES				
Metformin [*]	1,500-2,550 mg divided	\$51.30		
Glucophage [*]		\$69.30		
Metformin extended release - <i>Glucophage XR</i> [*]	1,500-2,000 mg once	\$61.20		
NON-SULFONYLUREA SECRETAGOGUES (MEGLITINIDES)				
Nateglinide - <i>Starlix</i> [*]	60-120 mg t.i.d. before meals	\$84.60		
Repaglinide - <i>Prandin</i> [*]	1-4 mg t.i.d. before meals	\$77.40		
SULFONYLUREAS - SECOND GENERATION				
Glimepiride - <i>Amaryl</i> [*]	1-4 mg once	\$10.80		
Glipizide [*]	10-20 mg once or divided	\$10.20		
Glucotrol [*]		\$23.10		
Glipizide sustained-release - <i>Glucotrol XL</i> [*]	5-20 mg once	\$12.90		
Glyburide [*]	5-20 mg once or divided	\$12.60		
Diabeta [*]		\$22.20		
Micronase [*]		\$27.30		
Glyburide micronized tablets [*] - <i>Gly-nase PresTab</i> [*]	3-12 mg once or divided	\$12.60/\$24.60		
THIAZOLIDINEDIONES				
Pioglitazone - <i>Actos</i> [*]	15-45 mg once	\$88.20		
Rosiglitazone - <i>Avandia</i> [*]	4-8 mg once or divided	\$75.90		
COMBINATIONS				
Glyburide/metformin - <i>Glucovance</i> [*]	5 mg/500 mg b.i.d	\$52.20		
Glipizide/metformin - <i>Meta GLIP</i> [*]	5 mg/500 mg b.i.d	\$64.20		
Rosiglitazone/metformin - <i>Avandamet</i> [*]	4 mg/500 mg b.i.d	\$146.40		
INSULIN ACTION				
	ONSET	PEAK	DURATION	COST/10ml VIAL
SHORT-ACTING				
Regular	30-60 min	1½-2 hrs	5-12 hrs	\$26.20
Rapid-acting				
Lispro - <i>Humalog</i> [*]	10-30 min	30-60 min	3-5 hrs	\$46.20
Aspart - <i>Novolog</i> [*]	10-30 min	30-60 min	3-5 hrs	\$48.70
INTERMEDIATE-ACTING				
NPH/Lente	1-2 hrs	4-8 hrs	10-20 hrs	\$25.50/\$24.75
LONG-ACTING				
Gargline - <i>Lantus</i> [*]	1-2 hrs	no peak	24 hrs	\$43.70
Ultralente	2-4 hrs	8-20 hrs	16-24 hrs	\$25.10
MIXED INSULINS	CONTENT		COST/10ml VIAL	
Humulin and Novolin 70 / 30 [*]	70% NPH / 30% Regular		\$64.80/\$63.90	
Humalog Mix 75 / 25 [*]	75% Lispro protamine suspension / 25% Lispro		\$136.50	
NovoLog Mix 70 / 30 [*]	70% Aspart protamine suspension / 30% Aspart		\$131.40	
Humulin 50 / 50 [*]	50% NPH / 50% Regular		\$69.30	

Adapted with permission from Medical Letter. Treatment guidelines from the Medical Letter: drugs for diabetes. *Medical Letter*. 2002;1:1-6.

* Use of brand names is for informational purposes only and does not imply endorsement by the New York City Department of Health and Mental Hygiene.

* Available as generic



DIABETES PREVENTI

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Consider screening adults < 45 years of age if they are overweight and have the following additional risk factors for diabetes:

- Pre-diabetes (impaired fasting glucose or impaired glucose tolerance)
- BMI \geq 25 kg/m²
- Physical inactivity
- Family history of a first-degree relative with diabetes
- High-risk ethnicity, including African-American, Hispanic, Native-American, Asian-American, Pacific Islander
- Hypertension (BP \geq 140/90 mm Hg)
- HDL \leq 35 mg/dL and/or triglycerides \geq 250 mg/dL
- Polycystic ovary syndrome (PCOS)
- History of delivering a baby weighing > 9 lbs or diagnosis with GDM
- Clinical conditions associated with insulin resistance (PCOS or acanthosis nigricans)
- History of vascular disease.

Screening for Type 2 Diabetes in Children and Adolescents

Consider screening if **both** of the following criteria are met:

1. Overweight by 1 of the following criteria:

- BMI for age and sex \geq 85th percentile
- Weight for height \geq 85th percentile
- Weight > 120% of ideal weight for height.

CDC growth charts to assess obesity in children are available at www.cdc.gov/growthcharts/

2. Having any 2 of the following risk factors:

- A family history of type 2 diabetes in a first- or second-degree relative
- Being of a race/ethnicity at high risk for diabetes (e.g., African-American, Hispanic, Native-American, Asian-American, Pacific Islander)
- Clinical condition associated with insulin resistance (PCOS, acanthosis nigricans, hypertension, dyslipidemia).

When to Start Screening: Start to screen either at 10 years of age or at the onset of puberty, if puberty occurs when the child is < 10 years of age.

How to Screen: Screen every 2 years with a fasting plasma glucose test.

For high-risk persons who do not meet these criteria, use clinical judgment to determine if they should be screened.

Blood glucose testing to screen for diabetes is NOT recommended outside of the clinical care setting (e.g., health fairs).

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History and Physical	Frequency	Goal
Blood pressure	Every visit	< 130/80
Weight and BMI (Table 2)	Every visit	Individualize
Dilated retinal exam	Annually	Retinopathy prevention
Comprehensive foot exam	Annually or every visit for high-risk patients	Lower extremity amputation prevention
Laboratory Analysis	Frequency	Goal
A1C	Every 3–6 months	< 7.0%
Fasting lipid profile	Annually	
LDL		< 100 mg/dL
Triglycerides		< 150 mg/dL
HDL		> 40 mg/dL in men; > 50 mg/dL in women
Total		< 200 mg/dL
Urine albumin-to-creatinine ratio (spot sample)	Annually, to screen for microalbuminuria	< 30 µg/mg
ECG	Baseline, as clinically indicated	

Vaccination

Recommendation

Influenza	Annually
Pneumococcus	Once, but revaccinate if patients are currently ≥ 65 years of age and were vaccinated when < 65 years of age and if 5 years have elapsed

Counseling and Risk Reduction

Recommendation

Smoking status	Assess tobacco use in all patients at every visit and advise patients NOT to smoke Provide smoking cessation treatment (www.nyc.gov/html/doh/pdf/chi/chi21-6.pdf)
Aspirin therapy	75–325 mg/day in all patients with macrovascular disease and all patients ≥ 40 years of age with 1 or more cardiovascular risk factor(s)
ACE inhibition	Treatment for HTN or microalbuminuria Consider using in patients who are > 55 years of age and do not have HTN or microalbuminuria but do have 1 or more other cardiovascular risk factor(s)
Dental care	Refer for annual dental care
Sexual functioning	Ask both female and male patients if they are experiencing sexual dysfunction and discuss therapy options
Depression	Screen using the Prime-MD 2-question Depression Screen below: ¹⁷ <i>During the past month, have you often been bothered by feeling down, depressed, or hopeless?</i> <i>During the past month, have you often been bothered by little interest or pleasure in doing things?</i>
Preconception counseling and pregnancy care	Optimize glucose control both before and during pregnancy Consider referring patients to a high-risk perinatal program

Self-Management

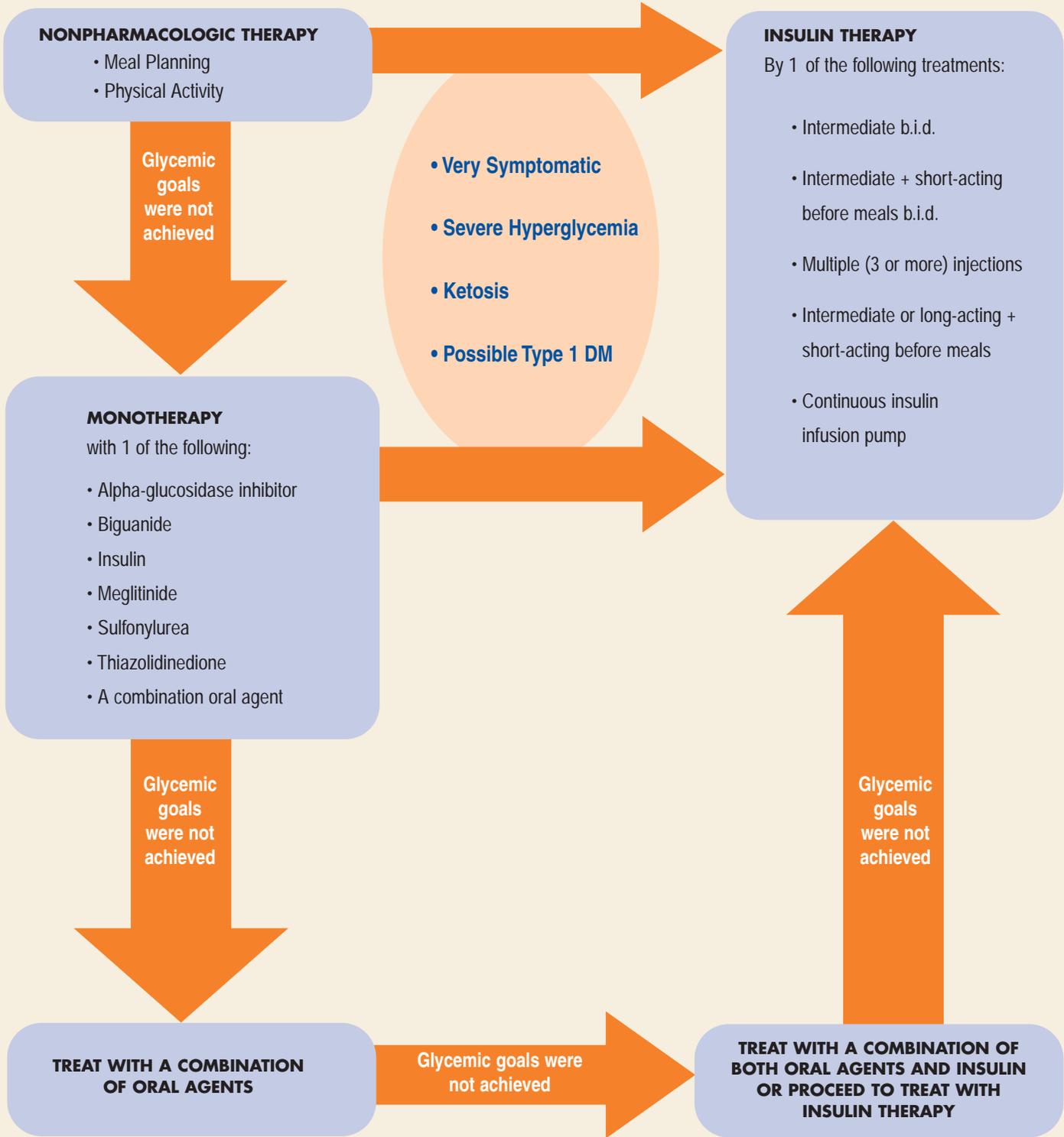
Goals (to be set jointly by the clinician and the patient)

Physical activity	30 minutes of moderate to vigorous physical activity at least 5 days a week
Nutrition	Advise a diet of low saturated and trans fats and high fiber (http://care.diabetesjournals.org/cgi/content/full/26/suppl_1/s51)
Weight management	For overweight patients (BMI ≥ 25 kg/m ²), advise a 10% weight reduction at a rate of 1–2 lbs per week
Self blood glucose monitoring	Teach technique; agree on how frequently it should be used and the actions to take if blood sugar is too high or too low
Self foot exam	Teach technique and evaluate how the patient performs exam

Adapted with permission from the American Diabetes Association. Standards of medical care for patients with diabetes mellitus. *Diabetes Care*. 2003;26:33–50.

- Adults with diabetes should receive all immunizations recommended by the Advisory Committee on Immunization Practices (ACIP); for more information, visit www.cdc.gov/nip/publications/ACIP-list.htm
- Women who do not intend to become pregnant can use all methods of contraception safely. For more information, visit www.nyc.gov/html/doh/pdf/chi/chi21-2t.pdf
- For more comprehensive nutrition recommendations, visit http://care.diabetesjournals.org/cgi/content/full/26/suppl_1/s51

MANAGING TYPE 2 DIABETES IN NON-PREGNANT ADULTS



DIABETES MEDICATIONS

ORAL AGENTS	USUAL DAILY DOSE	COST/MONTH		
ALPHA-GLUCOSIDASE INHIBITORS Acarbose - <i>Precose</i> * Miglitol - <i>Glyet</i> *	50–100 mg t.i.d. with meals 50–100 mg t.i.d. with meals	\$53.10 \$57.60		
BIGUANIDES Metformin* <i>Glucophage</i> * Metformin extended release - <i>Glucophage XR</i> *	1,500–2,550 mg divided 1,500–2,000 mg once	\$51.30 \$69.30 \$61.20		
NON-SULFONYLUREA SECRETAGOGUES (MEGLITINIDES) Nateglinide - <i>Starlix</i> * Repaglinide - <i>Prandin</i> *	60–120 mg t.i.d. before meals 1–4 mg t.i.d. before meals	\$84.60 \$77.40		
SULFONYLUREAS -SECOND GENERATION Glimepiride <i>Amaryl</i> * Glipizide* <i>Glucotrol</i> * Glipizide sustained-release - <i>Glucotrol XL</i> * Glyburide* <i>DiaBeta</i> * <i>Micronase</i> * Glyburide micronized tablets* - <i>Glynase PresTab</i> *	1–4 mg once 10–20 mg once or divided 5–20 mg once 5–20 mg once or divided 3–12 mg once or divided	\$10.80 \$10.20 \$23.10 \$12.90 \$12.60 \$22.20 \$27.30 \$12.60/\$24.60		
THIAZOLIDINEDIONES Pioglitazone - <i>Actos</i> * Rosiglitazone - <i>Avandia</i> *	15–45 mg once 4–8 mg once or divided	\$88.20 \$75.90		
COMBINATIONS Glyburide/metformin - <i>Glucovance</i> * Glipizide/metformin - <i>Meta GLIP</i> * Rosiglitazone/metformin - <i>Avandamet</i> *	5 mg/500 mg b.i.d. 5 mg/500 mg b.i.d. 4 mg/500 mg b.i.d.	\$52.20 \$64.20 \$146.40		
INSULIN ACTION				
	ONSET	PEAK	DURATION	COST/10ml VIAL
SHORT-ACTING Regular Rapid-acting Lispro - <i>Humalog</i> * Aspart - <i>Novalog</i> *	30–60 min 10–30 min 10–30 min	1½–2 hrs 30–60 min 30–60 min	5–12 hrs 3–5 hrs 3–5 hrs	\$26.20 \$46.20 \$48.70
INTERMEDIATE-ACTING NPH/Lente	1–2 hrs	4–8 hrs	10–20 hrs	\$25.50/\$24.75
LONG-ACTING Glargine - <i>Lantus</i> * Ultralente	1–2 hrs 2–4 hrs	no peak 8–20 hrs	24 hrs 16–24 hrs	\$43.70 \$25.10
MIXED INSULINS	CONTENT		COST/10ml VIAL	
Humulin and Novolin 70 / 30*	70% NPH / 30% Regular		\$64.80/\$63.90	
Humalog Mix 75 / 25*	75% Lispro protamine suspension / 25% Lispro		\$136.50	
NovoLog Mix 70 / 30*	70% Aspart protamine suspension / 30% Aspart		\$131.40	
Humulin 50 / 50*	50% NPH / 50% Regular		\$69.30	

Adapted with permission from Medical Letter. Treatment guidelines from the Medical Letter: drugs for diabetes. *Medical Letter*. 2002;1:1–6.

* Use of brand names is for informational purposes only and does not imply endorsement by the New York City Department of Health and Mental Hygiene.

◆ Available as generic