

Guiding Principles

NATIONAL

for Diabetes Care:

DIABETES

For Health Care

EDUCATION

Providers

PROGRAM



NATIONAL  
DIABETES  
EDUCATION  
PROGRAM

The National Diabetes Education Program (NDEP) has developed these *Guiding Principles for Diabetes Care* to help the health care team manage the disease effectively. The principles outline seven essential components of quality diabetes care that form the basis of NDEP's public and professional awareness programs. Payers of health care, managed care organizations, and large employers can use them to establish diabetes care principles, to assess quality, and to assure quality diabetes care and treatment service options in health plans.

The NDEP believes that people with diabetes and their families should actively participate with their health care team to plan and implement their care. While these principles serve as a guide for discussing diabetes management, each person with diabetes and his or her health care team determine the specific management plan.

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#### NDEP STAFF

TaWanna Berry, M.A.  
Joanne Gallivan, M.S., R.D.  
Sabrina Harper, M.S.  
Jane Kelly, M.D.  
Saul Malozowski, M.D., Ph.D., M.B.A.  
Elizabeth Warren-Boulton, R.N., M.S.N.



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and the Centers for Disease Control and Prevention.  
[www.ndep.nih.gov](http://www.ndep.nih.gov) Phone: 1-800-438-5383

# Introduction

The goal of the National Diabetes Education Program (NDEP) is to reduce the morbidity and mortality caused by diabetes and its complications through programs that increase awareness of the seriousness of the disease and the value of its treatment and prevention. These *Guiding Principles for Diabetes Care* for health care providers are evidence-based and describe the essential components of quality diabetes care.

People with diabetes and their health care team need to have ongoing discussions about what care is best for each individual and why. Many health care providers make up the team to care for people with diabetes, including physicians, diabetes educators, nurses, dietitians, pharmacists, social and mental health workers, eye specialists, foot specialists, and dentists.

Ongoing, comprehensive diabetes care can prevent or control diabetes-related macrovascular complications (heart disease, stroke, and circulatory problems) and microvascular complications (blindness, amputations, and end-stage renal disease). With proper education and self-care, people with diabetes should expect to lead long, active, and productive lives.

## PRINCIPLE 1:

# Identify People with Pre-Diabetes and Undiagnosed Diabetes

To improve health outcomes, it is essential to identify people at high risk for diabetes as well as those who are undiagnosed, and treat them appropriately. More than 18 million Americans have diabetes; 5.2 million of whom have undiagnosed type 2 diabetes. More than 40 percent of U.S. adults ages 40-74—or 41 million people—currently have pre-diabetes, placing them at increased risk for cardiovascular disease and type 2 diabetes.

## DEFINITIONS

Impaired Fasting Glucose	Fasting plasma glucose (FPG) 100–125 mg/dl after an overnight fast
Impaired Glucose Tolerance	2-hr post 75g glucose challenge 140–199 mg/dl
Diabetes	Random plasma glucose >200 mg/dl with symptoms (polyuria, polydipsia, and unexplained weight loss) <b>or</b> FPG >126 mg/dl <b>or</b> 2-hr plasma glucose >200 mg/dl post 75g glucose challenge

Pre-diabetes is the term that has been adopted to describe those states that occur when a person's blood glucose levels are higher than normal but not high enough for a diagnosis of diabetes. People with pre-diabetes have impaired fasting glucose (IFG) or impaired glucose tolerance (IGT) and are at increased risk for type 2 diabetes.

Although the 2-hour 75g glucose challenge is more sensitive than a FPG value for diagnosing pre-diabetes or diabetes, use of the test is not always practical. If only a FPG is used, however, some diagnoses will be missed. The diagnosing health care provider should use clinical judgment to decide which test to use. A diagnosis of diabetes should be confirmed on another day.

## RISK FACTORS FOR PRE-DIABETES AND DIABETES INCLUDE:

**Age**— 45 and older  
PLUS

**Overweight**—body mass index  $\geq 25$  kg/m<sup>2</sup> ( $\geq 23$  if Asian American or  $\geq 26$  if Pacific Islander)

In addition to age and weight, these factors increase risk:

**Ethnicity**—African American, American Indian, Asian American, Hispanic and Latino American, or Pacific Islander heritage

**Family history**—have a first-degree relative with diabetes

**History of gestational diabetes** or gave birth to a baby weighing  $> 9$  lbs

**Hypertension**—blood pressure  $> 140/90$

**Abnormal lipid levels**—HDL cholesterol level  $< 40$ mg/dl for men and  $< 50$ mg/dl for women; triglyceride level  $> 250$  mg/dl

**IGT or IFG** on previous testing

**Polycystic ovary syndrome** or acanthosis nigricans

**History of vascular disease**

**Inactive lifestyle**—exercises less than three times a week

Testing is strongly recommended when a person is age 45 or older and overweight.

Consider testing when a person is:

- 45 or older or
- younger than 45, overweight, with one or more risk factors.

If results are normal, consider testing at 3-year intervals.

Early identification of pre-diabetes and diabetes may reduce or prevent the development of long-term complications before the person has been diagnosed.

The diagnosis of pre-diabetes and diabetes should be clear, based on accepted guidelines for FPG or IGT values.

Terms such as “a touch of diabetes” or “sugar’s a little high” are confusing and should not be used. People with diabetes should know what type of diabetes they have.

## PRINCIPLE 2:

# Provide Ongoing, Patient-Centered Care

People with diabetes need to be part of a health care delivery system that provides high quality, patient-centered care on an ongoing basis. This approach ensures that timely changes in their treatment are made to achieve optimal control of the disease.

People with diabetes need ongoing care in a patient-centered, supportive, and positive environment, without barriers to obtaining care. The health care team should include a provider responsible for ongoing care and skilled in its delivery, with access to other physician specialists and health care professionals.

Certain high risk groups—ethnic populations, children, pregnant women, and the elderly—have special needs that should be addressed. People with diabetes also need support from their family, friends, and co-workers. Financial resources are needed for ongoing education, durable equipment, supplies, medications, and insulin. Discrimination against employment, licensing, and obtaining insurance should be avoided.

## PRINCIPLE 3:

# Offer Diabetes Education

People with diabetes and their family members need accurate information and education for diabetes self-care.

Health care providers are responsible for offering diabetes education that addresses the medical and emotional needs of the individual patient. Education enables people with diabetes to participate more actively in their treatment and in prevention of complications.

Diabetes education is a continuous process. It should begin with the essential elements of self-care and include instruction on following the prescribed medical regimen. Over time, the instruction should

become a dialogue that defines and addresses the ongoing needs of the individual and his or her family.

People with pre-diabetes and diabetes need opportunities to acquire the knowledge and skills that enable and empower them to perform effective self-care. Certified diabetes educators and dietitians can help provide these services. It is important to enlist family members and others who provide support to help the patient achieve a greater measure of self-care and quality of life.

## PRINCIPLE 4:

# Treat Diabetes Comprehensively

A1C, blood pressure, and cholesterol, the “ABCs of diabetes,” should be kept as near to normal as is safely possible. The target values should be based on an overall assessment of the person’s health.

A primary goal of diabetes treatment is the control of hyperglycemia by a variety of methods. It is well known that over many years hyperglycemia causes long-term complications of diabetes. The risk of eye disease (retinopathy), kidney disease (nephropathy) and nerve damage (neuropathy) is strongly linked with high blood glucose levels.

Scientific evidence shows that controlling blood glucose, blood pressure, and cholesterol—the “ABCs of diabetes”—can lower the risk for cardiovascular disease (hardening of the arteries, heart attack, stroke, and circulatory problems).

All people with diabetes should follow a healthy food and physical activity plan. In type 1 diabetes, insulin is always required, combined with a well-defined treatment plan. In some people with type 2 diabetes, following a healthy food and exercise plan initially achieves diabetes control, but most will eventually require the addition of oral medications and/or insulin.

The exact methods of treatment—diet, exercise, oral antidiabetic agents and/or insulin—should be tailored to individual needs. People with diabetes should participate in the decision making process, with options, goals, and targets clearly stated.

<b>Target ABC Values</b>	A1C <7 percent
	Blood Pressure <130/80
	Cholesterol (LDL) <100 mg/dl

## PRINCIPLE 5:

# Monitor Blood Glucose Control using the A1C Test

A1C and blood glucose should be measured on a routine basis using current, reliable methods.

A1C is the principal method for monitoring glucose control. The NDEP and its partners have adopted the simple name “A1C” when referring to the hemoglobin A<sub>1c</sub> test. It is a standardized blood test that indicates the average blood glucose over the previous 8 to 12 weeks. Since most long-term complications of diabetes are related to A1C, measuring it should be a regular part of assessing diabetes care. People with diabetes should know their own A1C and whether they are reaching their target.

The absence of symptoms of high blood glucose is an unreliable guide for judging glucose control since

symptoms do not occur until blood glucose reaches high levels. Diabetes is often called a “silent disease” because it can cause serious complications without having serious symptoms.

Routine self-monitoring of blood glucose is a successful approach in self-management of diabetes because it provides a picture of the immediate blood glucose level. Individual circumstances will define how often self-monitoring is used, the specific approach, and the methods of recording and reporting results. People with diabetes need access to self-management tools, including blood glucose meters and strips.

## PRINCIPLE 6:

# Prevent Long-term Diabetes Problems

Comprehensive care can significantly lower risk for long-term diabetes problems.

For those with pre-diabetes, modest weight loss (5 to 7 percent) through regular physical activity and a low fat, low calorie diet can prevent or delay the onset of diabetes. Preventing or delaying the onset of diabetes also is likely to prevent or delay the onset of diabetes complications.

For those with diabetes, controlling blood glucose is one important way to prevent complications. For every 1 percent lowering of the A1C toward normal, there is up to a 37 percent reduction in risk for microvascular complications in people with type 1 and type 2 diabetes.

To reduce the risk of cardiovascular disease, other important risk factors must be controlled—hypertension, abnormal blood fats (especially high LDL-cholesterol, high total cholesterol, and low

HDL-cholesterol), and smoking. Routine measurement and management of these risk factors are essential for good diabetes care. In people with diabetes, the cardiovascular benefits of blood pressure and lipid control are equal to or greater than the benefits to people without diabetes.

For both types of diabetes, preventing long-term complications is enhanced by practicing the following healthy self-care behaviors:

- Eating healthy foods
- Controlling portion sizes
- Getting daily physical activity
- Taking prescribed medications (including aspirin)
- Performing foot care
- Making routine visits to health care providers for foot, dental, and eye care
- Stopping smoking

# Identify and Treat Long-term Diabetes Problems

People with diabetes should have regular exams to help find and treat diabetes problems. All diabetes problems have effective treatments.

Routine checking for long-term complications can help detect problems at a time when they can be treated and managed successfully. The physical examination and laboratory tests that identify early complications include:

**At each diabetes visit:**

- Blood pressure
- Weight check
- Foot check

**Annually:**

- Lipid profile (every 2 years in normal)
- Dilated eye examination by a competent professional for detecting retinal and other eye complications (if normal, an eye care specialist may advise an exam every 2 to 3 years)
- A physical examination for detecting nerve damage
- Comprehensive foot exam to identify high risk feet (by checking circulation, loss of feeling, sores, or changes in shape)
- Serum creatinine and urinalysis for protein, microalbumin, albumin-to-creatinine ratio to detect kidney disease

**Twice each year:**

- A1C (quarterly if patient is not meeting goals)
- Dental exams to prevent gum disease and loss of teeth

**Vaccinations:**

- Influenza (annually)
- Pneumococcal (usually only once, repeat if over 64 or immunocompromised and last vaccination was more than 5 years ago)

Diabetes complications usually can be prevented or delayed if found and treated at an early stage. Progression of cardiovascular disease leading to heart attack and stroke can be slowed or prevented by rigorous management of blood pressure and lipids. Diabetic kidney disease can be slowed or prevented by controlling blood pressure and blood glucose. Severe eye disease can be successfully treated by laser therapy. Circulatory complications in the legs, heart, or brain may be improved by treatment, including vascular surgery. These examples show the importance of treating long-term complications at any stage of diabetes.

## Resources

The following NDEP publications contain information based on the *Guiding Principles for Diabetes Care* and are designed for people with diabetes and their families. Free copies may be ordered by calling 1-800-438-5383 or they may be downloaded from the NDEP's website, [www.ndep.nih.gov](http://www.ndep.nih.gov). As with all NDEP publications, these materials may be reproduced and distributed without copyright restrictions.

**7 Principles for Controlling Your Diabetes for Life**—A booklet for people with diabetes that describes the essential components of quality diabetes care in a checklist form.

**4 Steps to Control Your Diabetes for Life**—An easy-to-read booklet that condenses the guiding principles and helps people with diabetes make informed decisions about their diabetes care.

**Be Smart About Your Heart: Control the ABCs of Diabetes**—A brochure that explains the ABCs of diabetes (A1C, Blood Pressure, and Cholesterol) and provides a wallet card to help patients track

their ABCs. Also available in Spanish and 15 Asian and Pacific Islander languages.

**If You Have Diabetes, Know Your Blood Sugar Numbers**—A pamphlet that explains the A1C test and the importance of monitoring blood glucose control.

**Control Your Diabetes. For Life. Tips to Help You Feel Better and Stay Healthy**—A handout that provides tips for managing diabetes and a form to create a personal diabetes action plan.

**Tips for Helping a Person with Diabetes**—A handout that provides tips for helping a loved one with diabetes and includes a resource list.



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