



**What is the link between diabetes and cardiovascular disease (CVD)?**

- CVD is a major complication of diabetes and the leading cause of early death among people with diabetes—about 65 percent of people with diabetes die from heart disease and stroke.
- Adults with diabetes are two to four times more likely to have heart disease or suffer a stroke than people without diabetes.
- High blood glucose in adults with diabetes increases the risk for heart attack, stroke, angina, and coronary artery disease.<sup>1</sup>
- People with type 2 diabetes also have high rates of high blood pressure, lipid problems, and obesity, which contribute to their high rates of CVD.<sup>2</sup>
- Smoking doubles the risk of CVD in people with diabetes.

**What is the national response to this major health problem?**

The National Diabetes Education Program (NDEP) works in collaboration with many partner organizations to reduce illness and death from CVD in people with diabetes.

NDEP’s *Control Your Diabetes. For Life.* education campaign strives to help health care professionals and their patients control the multiple risk factors associated with CVD and diabetes. It also helps people with diabetes learn how to reduce their risk of diabetes kidney, eye, and nerve disease. The campaign focuses on comprehensive control of diabetes and urges optimal management of A1C (a measure of average blood glucose), Blood pressure, and Cholesterol. The ABC treatment goals for most people with diabetes are:

- A A1C (blood glucose) less than 7 percent
- B Blood Pressure less than 130/80 mmHg
- C Cholesterol – LDL less than 100 mg/dl

**What are the benefits to people with diabetes when they control their ABCs?**

The United Kingdom Prospective Diabetes Study,<sup>3</sup> the Diabetes Control and Complications Trial/Epidemiology of Diabetes Interventions and Complications<sup>1</sup> study, and other clinical trials have demonstrated the following benefits of optimal control of the ABCs of diabetes:

- Intensive glucose control reduces the risk of any CVD event by 42 percent and the risk of heart attack, stroke, or death from CVD by 57 percent.<sup>1</sup>
- In general, every percentage point drop in A1C blood test results (e.g., from 8.0 percent to 7.0 percent) reduces the risk of diabetes, kidney, eye, and nerve disease by 40 percent.<sup>2</sup>
- Blood pressure control reduces the risk of CVD among persons with diabetes by 33 percent to 50 percent, and the risk of diabetic kidney, eye, and nerve disease by approximately 33 percent.<sup>2</sup> In general, for every 10 mm Hg reduction in systolic blood pressure, the risk for any complication related to diabetes is reduced by 12 percent.<sup>2,3</sup>
- Improved control of cholesterol or blood lipids (for example, HDL, LDL, and triglycerides) can reduce CVD complications by 20 percent to 50 percent.<sup>2</sup>

**How well are people meeting therapy goals for diabetes and CVD?**

National surveys of people with diabetes show that there still is a wide gap between current and desired diabetes care. For example:

- only 7.3 percent of people surveyed were at goal for all three ABCs of diabetes<sup>4</sup>
- two in five have poorly controlled LDL cholesterol
- one in three has poorly controlled blood pressure
- one in five has poorly controlled blood glucose.<sup>5</sup>

## NATIONAL DIABETES EDUCATION PROGRAM

### *The Link Between Diabetes and Cardiovascular Disease*

#### **What can people with diabetes do to lower their CVD risk?**

People with diabetes can work with their health care team to develop and use an action plan to reach their ABC goals. An action plan can help people to:

- **Reach and stay at a healthy weight.** Being overweight or obese is a risk factor for heart attack and stroke.
- **Get at least 30 to 60 minutes of physical activity.** Brisk walking or a similar activity most days of the week can help with weight loss and lower blood pressure.
- **Eat foods that are low in saturated fats, trans fats, cholesterol, salt (sodium), and added sugars** – choose lean meats, poultry, fish, nuts (in small amounts), fat-free or low-fat milk, and milk products.
- **Eat more fiber** – whole grains, fruits, vegetables, and dry peas and beans.
- **Stop smoking** – or ask their health care team for help to quit. Smoking is one of the major risk factors associated with heart attack and stroke.
- **Take medications as directed** – and ask their doctor about taking daily aspirin.
- **Ask family and friends to help them manage their diabetes.** This support can help people reach their goals.

#### **How can NDEP help?**

NDEP provides free materials to help people with diabetes understand the link between diabetes and CVD and to take action to manage the ABCs of diabetes and lower their risk for CVD. Materials are available in English, Spanish, and 15 Asian and Pacific Islander languages. All materials include a record form to track the ABCs of diabetes test results and monitor progress toward goals.

**For free copies of NDEP's materials about the ABCs of diabetes, call 1-800-438-5383 or visit [www.ndep.nih.gov](http://www.ndep.nih.gov) and click on diabetes control. These materials may be downloaded, reproduced, and distributed without copyright restrictions.**

#### **References**

1. Nathan DM, Cleary PA, Backlund JY, et al. Intensive diabetes treatment and cardiovascular disease in patients with type 1 diabetes. *N Engl J Med*. Dec 22 2005;353(25):2643-2653.
2. National Institute of Diabetes and Digestive and Kidney Diseases. National diabetes statistics fact sheet: general information and national estimates on diabetes in the United States, 2005. Bethesda, MD: U.S. Department of Health and Human Services, National Institutes of Health; 2005.
3. Adler AI, Stratton IM, Neil HA, et al. Association of systolic blood pressure with macrovascular and microvascular complications of type 2 diabetes (UKPDS 36): prospective observational study. *BMJ*. 2000;321(7258):412-419.
4. Saydah SH, Fradkin J, Cowie CC: Poor control of risk factors for vascular disease among adults with previously diagnosed diabetes. *JAMA* 2004; 291(3): 335-42.
5. Saaddine JB, Cadwell B, Gregg EW, et al.: Improvements in diabetes processes of care and intermediate outcomes: United States, 1988-2002. *Ann Intern Med* 2006; 144(7): 465-74.



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