The Link Between Diabetes and Cardiovascular Disease

What is the significance of the link between diabetes and CVD?

- **CVD is a major complication and the leading cause of premature death among people with diabetes—at least 65 percent of people with diabetes die from heart disease or stroke.[1]**
- Adults with diabetes are **two to four times more likely to have heart disease or suffer a stroke** than people without diabetes.
- Middle-aged people with type 2 diabetes have the **same high risk for heart attack as people without diabetes who already have had a heart attack.[2, 3]**
- Relatively small improvements in blood glucose (sugar), lipids, and blood pressure values result in decreased risk for diabetes complications.

Haven't deaths from heart disease been declining?

- Deaths from heart disease in **women with diabetes** have **increased 23 percent** over the past 30 years compared to a 27 percent decrease in women without diabetes.[4]
- Deaths from heart disease in **men with diabetes have decreased by only 13 percent** compared to a 36 percent decrease in men without diabetes.[4]
- Heart attacks occur at an earlier age in people with diabetes.[5]
- **People with diabetes are more likely to die from a heart attack** and are more likely than those without diabetes to have a second event.[5, 6]

Why the increased risk of CVD for people with diabetes?

- People with type 2 diabetes have **high rates of hypertension, dyslipidemia and obesity,** major reasons for their two-to-four-fold higher rates of CVD.[7]
- Ninety-seven percent of adults with type 2 diabetes have one or more lipid abnormalities.[8]
- About 70 percent of people with diabetes also have high blood pressure.[8]
- Sticky blood platelets contribute to clotting problems and poor blood flow in people with diabetes.[3, 9]
- Smoking doubles the risk for CVD in people with diabetes.[3]

Who is at highest risk for premature death or disability due to diabetes and CVD?

- **People with a family history of diabetes.** People who have a first degree relative with type 2 diabetes are at increased risk.

- **Overweight and obese people**. Approximately 80 percent of people with type 2 diabetes are overweight and type 2 diabetes occurs at an earlier age in overweight people.[10, 11]
- **Special populations.** The following populations are particularly at risk for diabetes and its complications—African Americans, Hispanic/Latino Americans, American Indians, and Asian Americans and Pacific Islanders. These groups are growing rapidly.[12, 13]
- **Older people.** The incidence of diabetes rises with advancing age and the number of older people in the United States is growing rapidly.

What are the therapy goals for optimal diabetes management?

These are the recommended therapy goals for the ABCs of diabetes:

A	A1C ………………	< 7 percent
B	Blood Pressure …….	< 130/80 mmHg
C	Cholesterol – LDL …	< 100 mg/dl

People with diabetes should ask their health care team the following questions:

- What are my A1C, blood pressure, and cholesterol numbers?
- What are my treatment goals?
- What do I need to do to reach and maintain my goals?

What should people with diabetes do to lower their CVD risk?

A variety of successful management approaches including therapeutic lifestyle changes--diet, weight management and increased physical activity—and drug therapy are currently available to control CVD risk factors and prevent or treat the complications of diabetes.

People with diabetes should:
- Participate with their health care team in treatment decisions, set individual lifestyle goals, receive adequate education, and actively manage their disease.
- Control their blood glucose and blood pressure to reduce the risk for eye, kidney and nerve disease.
- Control their blood pressure and cholesterol to reduce their risk for CVD.
- Ask about aspirin therapy for CVD prevention.
- If they smoke, quit.

How are people doing in meeting therapy goals for diabetes and CVD?

Among surveyed adults with diabetes:[8, 14]
- 45 percent had A1C < 7 percent,
- 62 percent had blood pressure levels ≤ 140/90,
- 11 percent had LDL cholesterol level ≤ 100 mg/dl,
- 20 percent used aspirin regularly, and
- 22 percent smoked cigarettes.

What are the benefits to people with diabetes when they control blood glucose, lipids, and blood pressure?

- For every 1 percent reduction in A1C, the relative risk for microvascular complications decreased by 37 percent, diabetes-related deaths by 21 percent, and heart attack by 14 percent (heart attack reduction was of borderline statistical significance).[15]
- Rigorous management of hypertension slows the rate of progression of diabetic renal disease, reduces risk of stroke, diabetes-related death, heart failure, and vision loss. UKPDS data showed that for each 10 mm Hg decrease in mean systolic blood pressure, the relative risk for microvascular complications decreased by 13 percent, diabetes-related deaths by 15 percent, and heart attack by 11 percent.[16]
- Aggressive lipid reduction therapy reduces the risk of CVD in people with diabetes.[17, 18]

What are the costs associated with diabetes and CVD?

- CVD is the most costly complication of type 2 diabetes, accounting for more than $7 billion of the 44.1 billion annual direct medical costs for diabetes in 1997.[19]
- Sustained reduction in A1C levels among adults with diabetes was associated with significant cost savings within 1 to 2 years.[20]

What is the national response to this major health problem?

- The National Diabetes Education Program is launching a new awareness campaign to highlight the link between diabetes and cardiovascular disease. More than 200 partners are joining the effort to educate people with diabetes and the health care system about the risk factors and the steps to control them.
- The new campaign *Be Smart About Your Heart: Control the ABCs of Diabetes* focuses on managing blood glucose with the **A**1C test, **B**lood pressure, and **C**holesterol.

Are there any research studies underway?

There are a large number of studies underway; here are just a few examples of the research that is planned or being conducted.

- Look AHEAD will be a multicenter, randomized clinical trial to study whether interventions designed to produce sustained weight loss in obese individuals with type 2 diabetes mellitus improve health. The trial, sponsored by the National Institute of Diabetes and Digestive and Kidney Diseases, others at the NIH, and CDC, expects to enroll 5,000 obese patients with type 2 diabetes for a period of 4 to 7 years, beginning in 2001.

- The National Institute of Diabetes and Digestive and Kidney Diseases, National Eye Institute, National Institute of Nursing Research, and the American Diabetes Association are now soliciting research proposals to translate recent advances in the prevention and treatment of type 1 or type 2 diabetes into clinical practice for individuals and communities at risk. The program will support research that will enhance health promotion, diabetes self-control, and reduction in risk at the health care system level, the provider level, and the patient level. Applications may be submitted until October 2004.

- Major national surveys sponsored by the Centers for Disease Control and Prevention to track health status and health care delivery include the National Health and Nutrition Examination Study (NHANES) and the Behavioral Risk Factor Survey Study (BRFSS).

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