CONTROL DIABETES

What is *CONTROL DIABETES*?

Control Diabetes is a Microsoft Windows program that allows diabetics to calculate and monitor the amount of fat (saturated and total fat), cholesterol, sodium, carbohydrate, calcium, protein and calories in their diet. It comes with databases totaling nearly 2,000 carefully selected foods divided into convenient food groups. In addition, *Control Diabetes* provides an easy to use analysis of sugars in common foods. It also provides utilities to calculate user's ideal weight, suggested daily caloric, fat and fiber intake according to his or her personal factors. The program is a perfect tool for people with diabetes to manage their diet.

Why *Control Diabetes*?

Approximately 14 million Americans suffer from diabetes. If untreated, long-term effects of diabetes can be serious, even fatal. Such complications kill 150,000 people a year, making diabetes the fourth-leading disease killer in the United States. Since ancient times, diet has been recognized as a cornerstone of diabetes management. Treatment for Type I diabetes consists of a combination of controlled diet and daily injections of insulin, on the other hand, diet alone can control Type II diabetes in many cases. *Control Diabetes* is an essential tool for accurate monitoring of diabetic diet prescribed by health providers.

Role of Specific Dietary Factors in Diabetes

Fat
The traditional restriction of carbohydrate intake in persons with diabetes leads to an increased fat intake (and, usually, saturated fat) because the percent of protein in human diets typically does not vary much. This high saturated fat consumption may have contributed to the frequent cardiovascular complications seen in past years among persons with diabetes. To help reduce this increased risk for coronary heart disease, a diet low in total fat, saturated fat, and cholesterol has been recommended (American Diabetes Association Task Force 1987). Fat intake should comprise 30 percent or less of total calories. Because dietary fat contains more than twice the calories of either protein or carbohydrate, a reduction in fat intake should lead to a more favorable caloric balance, especially when this dietary change is accompanied by appropriate levels of physical activity. Controlling obesity by reducing dietary fat intake should help reduce the prevalence of Type II diabetes and is also consistent with dietary recommendations for the prevention of coronary heart disease, hypertension, and some types of cancer.

Carbohydrates
A diet containing 50 to 60 percent of total calories as carbohydrate is now recommended for individuals with diabetes (American Diabetes Association Task Force 1987), not only because high-carbohydrate diets improve glucose tolerance and insulin sensitivity, but also because the reduced fat--especially saturated fat--intake that accompanies a high-carbohydrate diet lowers cardiovascular risk.

Protein
The protein requirements of individuals with diabetes under good control seem to be the same as those of healthy individuals; that is, a daily intake of 0.8 g/kg of body weight for adults and somewhat higher intakes for infants, children, and pregnant or lactating women (NRC 1980).

When insulin levels are normal, protein is conserved in the body and the use of amino acids for glucose synthesis is limited. In persons with poorly controlled diabetes, dietary requirements may be increased because protein is used to synthesize glucose.

Individuals with diabetes and concurrent renal insufficiency should avoid excessive protein intake. Glomerular hyperfiltration (increased blood flow and filtration across the renal glomerular capillary bed) leads to impaired renal function in persons with diabetes, and increased protein intake may exacerbate renal damage. Furthermore, protein restriction slows the rate of decline in renal function in individuals with diabetic nephropathy. Because past dietary recommendations for persons with diabetes sometimes emphasized protein, and because the average American eats more protein than is necessary to maintain health, current recommendations suggest that people with diabetes should reduce protein intake below the level consumed by Americans (ADA Task Force 1987).

Cholesterol
Cholesterol consumption should be restricted to 300 mg/day or less to reduce cardiovascular risk.

Calcium
High serum cholesterol levels have been observed in calcium-deficient lab animals. In humans, an uncontrolled study of 10 hyperlipidemic subjects showed that the addition of 800 mg of calcium daily over 1 year reduced blood cholesterol levels by 25 percent. For diabetic people, calcium supplements may be necessary under special circumstances.

Sodium
Sodium should be restricted to 1,000 mg/1,000 kcal, not to exceed 3,000 mg/day, to minimize symptoms of hypertension.

Fiber
Recent studies have suggested that a higher intake of dietary fiber than is typical for Americans might improve many clinical conditions, including the abnormal glucose tolerance of diabetes. Some studies have demonstrated that diets containing higher amounts of fiber (particularly water-soluble fiber) and carbohydrate are associated with lower blood glucose and serum lipid levels.
Very high-carbohydrate, high-fiber diets, providing 70 percent of calories as carbohydrate and 35 g of plant fiber per 1,000 calories, consistently improve glucose tolerance, decrease fasting plasma glucose levels, lower insulin needs, and decrease serum cholesterol concentrations. These results have been confirmed in longer term studies comparing a more moderate diet that provides 55 to 60 percent of calories as carbohydrates and 25 g of plant fiber per 1,000 calories.

Alternative Sweeteners
Nutritive alternative sweeteners are sugars such as fructose and sorbitol that can be used as sources of calories. Aspartame, strictly speaking, is a nutritive sweetener, but it is used in such small quantities that its caloric contribution is minimal. Non-nutritive alternative sweeteners, such as saccharin and cyclamate, provide virtually no calories in relation to their sweetness.
Alternative sweeteners may be useful for persons with diabetes consuming sugar-restricted diets, both to provide sweetness without associated hyperglycemia and, in some cases, to help reduce caloric intake in overweight individuals.

Role of Dietary Therapy in Diabetes Management

Lifelong care is required to avoid or reduce the risk factors and complications of Type I and Type II diabetes. Because strategies to control hyperglycemia are similar to those used to reduce excessive blood lipid levels, blood pressure, and body weight and their associated cardiovascular

risks, dietary therapy is considered the key to diabetes management (ADA Task Force 1987).

In persons with Type I diabetes, the goals of dietary management are to maintain appropriate body weight and prevent hypoglycemia (as well as hyperglycemia). These are accomplished by consuming meals with an appropriate calorie content at regular intervals, coordinated with the times of insulin injection and levels of physical activity. Because individuals with this form of the disease are usually young and lean, caloric intake must be adequate to support normal growth and development.

In contrast, 80 to 90 percent of individuals with Type II diabetes are overweight, and the first goal or diet therapy for such persons is weight loss. Hence, for most of these individuals, restriction of caloric intake and increased physical activity leading to moderate weight loss may be sufficient to control blood glucose levels and to avoid the need for insulin or hypoglycemic medication (ADA Task Force 1987). Once desirable weight is achieved, people with Type II diabetes must continue to adhere to the recommended diet to maintain the reduced weight while consuming amounts of nutrients necessary to maintain normal blood glucose levels.

How to use Control Diabetes?

System requirement
Control Diabetes requires Microsoft Windows version 3.1.

Installation
Copy all files from the diskette to a directory which must be on your path.

Running the program
From the File menu in Program Manager or File Manager, choose Run. The Run dialog box appears. Type 'cd.exe' in the edit control. Then choose the OK button or press ENTER.

Meal selection
First you choose a meal to analyze by clicking on the Meal combo box using the mouse (or type Alt-m to set the focus there). There are 6 meals: breakfast, morning snack, lunch, afternoon snack, dinner and evening snack. You can use the mouse to select one of these meals, or you can use the keyboard to type in the first character of the meal you want. Typing 'b' will select breakfast, typing 's' will move the selection sequentially from one snack to another, for example.

Food group selection
The next step is to choose a food group from the Group combo box. Again the selection of a food group is similar to the selection of a meal. Once a food group has been chosen, the food items in that group are displayed in the list box below the combo box. Now you can select the food you eat. *Registered users will receive an expanded database of food items.*

Food item selection
Double click on a food item; or single click on the desired item then click on "I eat" push button. Using the keyboard, you can move to the desired food item using the first character of the food name when the focus is in the food selection list box, then hit Alt-e to select the food. The selected food will be displayed in the meal list box and its nutrients in the Food Item group box.

Quantity adjustment
If you are satisfied with the serving size, you can go on to select other food items. Otherwise, you can change the quantity by editing the number in the serving edit control and click on the

Am(oun)t OK button.　　Data in the analysis group boxes will be updated to reflect the new amount.　The acceptable values are from .1 to .9 servings and from 1 to 99.　You can always go back and adjust the quantity of the food item later.

Deleting food item from meal
If you make a mistake and want to remove a food item from a meal, just select the food item in the left list box then click on the delete button or type Alt-d.

File commands

New
Use this command to clear the existing food selection and create a new file.

Open
If your diet doesn't vary much from day to day, Control Diabetes makes it convenient for you to create new analysis by modifying an existing file.

Save and Save as
You can save a day's data in a file for later reference. Just select the 'Save' or 'Save as...' menu item. The saved file extension should be .cdw.

Print
You can print the analysis of your food consumption by selecting the 'Print' command. Only meals containing food items will be printed.

Printer setup
Use this command to set up your printer.

Utilities

Desirable weight
Use scroll bar to specify your height (without shoes). The recommended weight (based on American Heart Association guideline) is that without clothes. Obesity greatly increases the risk of developing Type II diabetes, and obesity is in turn related to caloric imbalance: excessive intake of energy and/or insufficient energy expenditure.

Caloric need
Recommended value is also based on American Heart Association guideline. Use scroll bars to specify your age, weight and activity level.

Caloric expenditure
This utility allows you to calculate the amount of calories expended based on the type of activity (from sitting still to boxing), its duration and your weight. _Registered users will receive an expanded database of activities._

Sugar analysis
This utility analyses the sugar contents of over 500 common food items. The data are provided for glucose, fructose, lactose, sucrose, maltose, galactose and other sugars. _Registered users will receive an expanded database of food items._

Recommended Daily Soluble Fiber Intake

There are 2 kinds of fiber. One type, known as insoluble because it is not digestible. This type will help your elimination but does not lower serum cholesterol. The other type, *soluble fiber*, has been shown to be effective in lowering cholesterol levels.

A person who is accustomed to a low fiber diet (the average American diet) will often feel bloated and may sometimes experience gastrointestinal discomfort if large amounts of fiber are suddenly introduced. The first rule for those who wish to increase the fiber content of their diet is to do so gradually.

A maximum of 18 grams of soluble fiber per day is recommended: there is a limit to the amount of fiber a person can eat because at very high levels of fiber intake, some unwanted side effects may begin to appear.

Foods with High Soluble Fiber Content
This utility allows you to quickly identify foods with high soluble fiber content. Foods can be sorted alphabetically or according to their fiber values. *Registered users will receive an expanded database of food items.*

Registration information
To register or buy additional copies of Control Diabetes v. 1.2, please send $29 per unit to:

NutriSoft
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About NutriSoft
NutriSoft was established by a group of Stanford University researchers to provide consumers with quality software to help them achieve better health. Your suggestions and comments on our products are much appreciated.

List of software released by NutriSoft as of December, 1992:

Fat and Cholesterol Counter *for Windows*, v. 1.1 ($19)
This program is a perfect companion to American Heart Association's *Fat and Cholesterol Counter*, a guide for everyone who wants a more healthful diet.

Control Diabetes *for Windows*, v. 1.2 ($29)
Essential tool for accurate monitoring of diabetic diet.