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## 5. Helping Patients Make Lifestyle Changes

### Medical Nutrition Therapy

The goals of medical nutrition therapy in diabetes are to prevent and treat the chronic complications of diabetes by attaining and maintaining optimal metabolic outcomes, including blood glucose and hemoglobin A1C levels, LDL and HDL cholesterol and triglyceride levels, blood pressure, and body weight. All patients should be referred to a registered dietitian, preferably one with experience in diabetes, for medical nutrition therapy, particularly when lifestyle modification is the primary method of treatment. Reimbursement for these services has improved greatly in recent years for patients with diabetes.

There is no such thing as a “diabetes diet.” Meal planning approaches vary based on the type of diabetes, meal-planning goals, and the treatment plan. Plans need to be developed in collaboration with patients based on their usual eating habits, preferred foods, cultural and religious practices and beliefs, metabolic targets, and self-selected goals. Most patients with type 1 diabetes employ advanced carbohydrate counting by using insulin ratios to manage glucose levels. For those with type 2 diabetes, meal planning approaches range from the very simple (such as the plate method) to the more complex (carbohydrate counting). Meal planning is only one method for managing type 2 diabetes, however. Regardless of the reason, patients for whom this form of therapy is ineffective need to progress to the next level of treatment. Therapies for weight loss are discussed more fully in Chapter 9 (Obesity).


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*What are some examples of meal planning methods for diabetes?*


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### The Plate Method

A simple strategy for nutrition and meal planning for patients with type 2 diabetes that can result in improved metabolic outcomes and weight loss is the plate method. This is a concrete visual tool to estimate portions and the percentage of particular foods. The plate method can be implemented immediately on diagnosis and before the patient sees a dietitian. The most widely used version divides the plate into fourths—one fourth carbohydrates, one fourth proteins and healthy fats, and two fourths (one half) nonstarchy vegetables. A variation of the plate method is to divide the plate into thirds: one third carbohydrates, one third proteins and healthy fats, and one third nonstarchy vegetables. The goal with either version is to eat the same amount of carbohydrates each day in consistent and reasonable proportions. The plate method is an easy approach for patients to use at potlucks, restaurants, and other settings where it may be hard to count carbohydrates.

 See *Rate Your Plate* in the Diabetes Care Guide Toolkit for a handout that you can provide your patients.

### Healthy Food Choices

This meal planning approach encourages people to eat a variety of foods from various categories (meat/fish, dairy, grains, fruits/vegetables, fats, sweets/snacks). The number of daily servings from each group is developed in collaboration  with a dietitian. The checklist *Eating Right* is available in the Toolkit to help patients plan to make healthy food choices.

## Basic Carbohydrate Counting

Basic carbohydrate counting helps patients get started with the carbohydrate counting system. Carbohydrate foods are identified as starches, fruit, milk, and desserts. The focus is consistency in the timing, type, and amount of carbohydrate-containing foods eaten. Portion size and label reading are fundamental to understanding how to count carbohydrates. Carbohydrates are measured in grams and may be referred to in grams or in servings (1 carbohydrate serving = 15 g of carbohydrate). Insulin adjustment based on basic carbohydrate counting is discussed in Chapter 8 (Insulins and New Injectables).

## Advanced Carbohydrate Counting

Advanced carbohydrate counting is often preferred by patients using multiple daily injections or insulin pumps. This approach gives them greater flexibility in both food choices and timing. Patients who are most successful using this approach check their blood glucose at least four times daily and make multiple daily self-management decisions based on their blood glucose levels, food intake, and activity.

The goal of advanced carbohydrate counting is to titrate the insulin dosage to the predicted effect carbohydrates in a meal will have on blood glucose. Referral to a registered dietitian and/or a certified diabetes educator who can work closely with the patient to determine the insulin-to-carbohydrate ratio is recommended. Advanced carbohydrate counting is also discussed in Chapter 8 (Insulins and New Injectables).

## Helping Patients Succeed with Meal Planning

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*What are some guidelines I can give patients regarding meal planning?*

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Blood glucose levels are directly affected by three factors:

### 1. Timing:

- Eat at least three meals or snacks spaced throughout the day.
- Eat each meal and snack at about the same time each day.
- Do not skip meals.

### 2. Portion size:

- Eat about the same amount at each meal each day.
- Pay attention to portion sizes.

### 3. Food composition:

- Carbohydrates are the main contributor to blood glucose.
- The total amount of carbohydrate eaten is a strong predictor of glycemic response; monitoring total grams of carbohydrate is, therefore, a key strategy for glycemic control.
- Using the glycemic index may benefit meal planning over the use of carbohydrate counting alone; however, it does increase the complexity of meal planning for patients, and the results of studies in this area are mixed.
- Low-carbohydrate diets are not recommended in diabetes. The recommended range of carbohydrate is 45%–65% of total calories. If the patient wishes to lose weight, this percentage may be lower. (See Table 9-3 for specific recommendations.)
- Alcohol in moderation is acceptable (total of two drinks or less daily for men and one drink or less daily for women).
- Simple sugar is not forbidden for people with diabetes.
- The goal is not to follow a diet; the goal is to manage blood glucose, blood pressure, and lipids by whatever means are necessary.

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*What should I ask my patients at each visit to assess their meal planning?*

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Some questions to ask patients with diabetes at each visit when assessing their meal-planning activities include:

- How well do you think your meal plan is working to manage your diabetes?
- What helps you use your meal plan? What gets in your way?
- Have you had difficulty using your meal plan? What specific problems have you encountered? What have you tried to solve this problem? What other options do you think might be effective?
- Do you have any questions about your meal plan?
- How can I help most?

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*What can I say to patients to help them stay more faithful to their meal plan?*

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Many patients have difficulty sticking to their meal plans. Some suggestions that may help include:

- Create a plan with a dietitian that takes into account your goals, eating habits, likes and dislikes, family, culture, and personally important foods.
- Set realistic goals for each week and reward yourself when you reach them. Goals that focus on eating habits rather than outcomes are more effective—for example, eating a sandwich and an apple for lunch three days this week instead of two sandwiches (versus losing a specified number of pounds). Goal-setting worksheets for patients are provided in chapter 2 of the toolkit (*Setting Your Self-Management Goal; Your Self-Management Workbook*).

- Eating healthy is not a “diet” but a different way to think about food.
- Let your family and friends know how they can be most helpful to you.
- Decide ahead of time how you will handle special events and holidays. Choosing not to use your meal plan is not “cheating.” It is making a decision you have both the right and responsibility to make.

## Physical Activity

Physical activity generally lowers blood glucose levels for people with either type 1 or type 2 diabetes. In type 2 diabetes, exercise also decreases insulin resistance and may decrease glucose output by the liver. Physical activity also helps people better manage stress by releasing endorphins, which counteract the effects of stress hormones.

The best forms of exercise are those that the patient enjoys, selects, and will sustain. Recommendations are based on the patient’s goals, overall health and level of fitness, the presence of complications, and the treatment plan. The American Diabetes Association recommends at least 150 minutes per week of moderate-intensity aerobic physical activity (50%–70% of maximum heart rate) or at least 90 minutes per week of vigorous aerobic exercise (>70% of maximum heart rate). The physical activity should be distributed over at least 3 days per week and should include no more than 2 consecutive days without physical activity. Cardiac stress testing is discussed in Chapter 12 (Complications of Diabetes).

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*What strategies can I suggest to my patients seeking to exercise more?*

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### Lifetime Physical Activity Model

This approach is appropriate for patients who have been sedentary or who have a negative

view of exercise. The goal is to develop a more active lifestyle by accumulating at least 30 minutes of moderate-intensity physical activities throughout the day on most days of the week. Moderate-intensity activities include walking, doing housework, dancing, raking leaves, climbing stairs, and similar tasks. The Centers for Disease Control and Prevention's website "Physical Activity for Everyone" reviews the Lifetime Physical Activity Model recommendations for clinicians and members of the general public ([www.cdc.gov/nccdphp/dnpa/physical/index.htm](http://www.cdc.gov/nccdphp/dnpa/physical/index.htm)). *Practical Exercise* in Chapter 5 of the Diabetes Care Guide Toolkit can help your patients discover ways to step up their activity level.


### 10,000 Steps

The goal of this approach is to encourage your patient to build up to walking 10,000 steps in a day, using a pedometer to keep track. Based on a reasonably active person walking 4,000 to 6,000 steps during a day's normal activities, a 10,000-step goal works out to an additional 4,000 to 6,000 steps (2-3 miles) daily, or the equivalent of a 30-minute (or longer) brisk walk. Thus, this approach is another way to accumulate 30 minutes of moderate-intensity activity daily.

The use of a pedometer serves as both a monitor and a motivator for many who use this approach. Encourage your patient to make simple lifestyle choices, such as taking the stairs instead of the elevator, or parking farther away from the store. These alternatives can add valuable extra steps to the daily total. Many web sites are available for consumers interested in the 10,000 Steps Program. A week-by-week approach that emphasizes gradually increasing steps is available at [www.walkinginfo.org](http://www.walkinginfo.org). A printable log for recording progress can be found at <http://www.walkinginfo.org/hf/features/10kday/10kday.htm#10k>.

### Planned Aerobic Exercise Programs

Another approach is to encourage your patient to engage in 20 minutes or more (in a session) of vigorous-intensity activity 3 or more days per week. Aerobic exercise programs should include 5 to 10 minutes of warm-up activity and 12 to 20 minutes of exercise in which the patient reaches at least 60% of the target heart rate. (See *Calculating Target Heart Rate*.) A cool-down period of 5 to 10 minutes should follow this exercise.

For maximum benefit, aerobic activity sessions need to occur at least three times per week. Aerobic exercise programs tailored to people of all ages and abilities are widely available, at community centers and fitness clubs as well as on television and video. To provide patients with personalized guidelines for the aerobic exercise  they have chosen, use *Your Aerobic Exercise Plan* in Chapter 5 of the toolkit.

### Anaerobic Exercise Programs

Resistance exercise consists of activities that use muscular strength to move a weight or work against a resistive load. Examples include weight lifting and exercises using weight machines. Resistance training improves insulin sensitivity and lowers blood glucose levels. People with type 2 diabetes who have no contraindications are urged to perform resistance exercise three times a week, targeting all major muscle groups. They should progress to three sets of 8–10 repetitions at a weight that they can't lift more than 8–10 times.

Resistance training may be contraindicated for patients with some complications and health problems (e.g., retinopathy). The Centers for Disease Control and Prevention's program "Growing Stronger" ([http://www.cdc.gov/nccdphp/dnpa/physical/growing\\_stronger/index.htm](http://www.cdc.gov/nccdphp/dnpa/physical/growing_stronger/index.htm)) guides resistance training for older

## Calculating Target Heart Rate

Target heart rate is based on age. To calculate a patient's target heart rate:

1. Subtract the patient's age from 220. This is the maximum heart rate.
2. The target heart rate for moderate-intensity exercise is generally between 50% and 70% of the maximum heart rate. Multiply the maximum heart rate by 0.5 and 0.7 to determine 50% and 70% of the heart rate.

As an alternative to calculating target heart rate, intensity can be determined by the patient's perceived level of exertion. Using this guide, the participant involved in light to moderate activity should still be able to talk in short sentences.

A target heart rate calculator is available on the accompanying CD-ROM and at the ACP Diabetes Portal at <http://diabetes.acponline.org>.

adults that may also be appropriate for adults with chronic health conditions such as diabetes.

## Helping Patients Succeed with Exercise Plans

### *What are some guidelines I can give patients to help them exercise safely?*

- Choose the correct shoes for the activity and make sure that they fit well. Checking the feet after exercise helps to prevent injuries and find problems, such as blisters, cuts, or other injuries that can quickly become more serious.
- Wear or carry diabetes identification, personal identification, treatment for hypoglycemia (such as glucose tablets or sugar packets), and a cell phone (or change for a

telephone) when you exercise, especially if you exercise alone.

- Exercise 1 to 3 hours after a meal. Avoid exercising when your insulin is peaking.
- Symptoms of hypoglycemia can be hard to recognize when they occur during exercise because they may be mistaken for overexertion. If you are unsure, stop exercising and check your blood glucose level and/or treat the hypoglycemia.
- Monitor your blood glucose before, during, and after exercise. If your blood glucose is less than 100 mg/dL and you take insulin or an insulin secretagogue, eat 15 to 30 grams of a carbohydrate and check your blood glucose again. Do not exercise until your glucose level is over 100 mg/dL.
- If you have type 1 diabetes and your blood glucose is 250 mg/dL or higher, test your urine for ketones. Do not exercise if you have ketones in your urine. Your blood glucose can go even higher.

### *How should I tell my patients to manage hypoglycemia during exercise?*

Some tips to share with patients about possible hypoglycemia during exercise include:

- Hypoglycemia can occur during, immediately after, and up to 12 to 48 hours after vigorous exercise. Hypoglycemia is rare, however, among patients with type 2 diabetes who are not taking insulin or an insulin secretagogue.
- Engaging in physical activity that is unusual may lead to hypoglycemia: for example, raking leaves, shoveling snow, doing heavy cleaning.
- People with type 1 diabetes may need to eat an exercise snack or decrease their insulin dosage for vigorous exercise.

- Additional carbohydrates may be needed during and after vigorous exercise that lasts for a long period of time.

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*What should I ask my patients at each visit to assess how they are doing with regard to physical activity?*

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Some questions to ask patients to assess their success in incorporating more physical activity in their lives include:

- How well do you think your exercise plan is working to manage your diabetes?
- About how often do you exercise each week? If you are not exercising, are you interested in starting to exercise?
- What helps you exercise? What gets in your way?
- Do you have difficulty with your exercise program? What specific problems have you encountered? What have you tried to solve this problem? What other options do you think might be effective?

- Do you have any questions about your exercise program?
- How can I help most?

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*Can I provide tips to help patients stay more faithful to their exercise plans?*

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The following tips can be shared with patients to help them stick to their exercise plans:

- Choose an activity that is enjoyable and plan alternatives for inclement weather or other situations (such as frequent travel).
- Set realistic goals for each week and reward yourself when you reach them. For example, walk 15 minutes after dinner 4 days this week.
- Exercise with a partner.
- Schedule exercise on your day planner or calendar just like other events.
- Let your family and friends know how they can be most helpful to you.

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