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So Many Nutrition Recommendations—Contradictory or Compatible?

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The Food and Nutrition Board of the National Academies, Institute of Medicine, in 2002 released their Dietary Reference Intakes (DRIs) for energy sources—fats, carbohydrates, and proteins.[1] Previously, the American Heart Association (AHA),[2] National Cholesterol Education Program (NCEP),[3] and the American Diabetes Association (ADA)[4,5] had also issued nutrition guidelines for energy sources. A major difference in the 2002 Food and Nutrition report is the move away from single maximum values for macronutrients as recommended in the past to acceptable ranges. To meet the body's daily nutritional needs while minimizing risk for chronic disease, it is recommended that adults consume 45–65% of their total energy from carbohydrates, 20–35% from fat, and 10–35% from protein. The expressed hope is that ranges will be more useful and flexible for food and nutrition planning.

What's Inside

Although recommendations from the AHA dietary guidelines, NCEP guidelines for the evaluation and treatment of high blood cholesterol in adults [Adult Treatment Panel (ATP) III], and the ADA nutrition principles and recommendations technical review and position statement are similar, there are differences in their approaches, ratings of evidence, and ease of translation to the general public.

How do the guidelines from the various health organizations differ from the DRIs and are they compatible or contradictory? The DRIs are an expanded system for determining the Recommended Dietary Allowances (RDAs) and other nutrient-based reference values for apparently healthy populations. Both the DRIs and the AHA guidelines focus on the prevention of chronic disease and, in the case of the AHA, specifically on reducing the risk of cardiovascular disease. The NCEP document updates clinical guidelines for cholesterol testing and management of dyslipidemia. Although ATP III's focus is on intensive treatment, including nutrition therapy, of patients with coronary heart disease, a major new feature of ATP III is attention to primary prevention in people with multiple risk factors. The ADA technical review and position statement address the role of medical nutrition therapy in the treatment and prevention of diabetes and related complications such as dyslipidemias and macrovascular disease classified according to the level of available evidence using the ADA evidence grading system. The highest ranking, A, is assigned when there is supportive evidence from multiple, well-conducted studies; B is an intermediate rating; C is a lower ranking; and E represents recommendations based on expert consensus.

Table 1, on page 2, summarizes the guidelines for energy sources (and fiber) from the four reports.

Total Fat, Saturated Fats, and Trans Fatty Acids

Total dietary fat. The DRI, NCEP, and ADA guidelines recommend ranges for the percentage of total daily energy from dietary fat, whereas the AHA simply recommends a fat intake of ≤30% of total energy to assist in limiting consumption of total energy as well as saturated fat. The DRI report concludes that adults should consume 20–35% of total energy intake from fat; infants and younger children generally need a somewhat higher proportion of fat in their diets than adults. The NCEP recommendation for total fat is in the range of 25–35% of energy intake, provided that saturated fats and trans fatty acids are kept low.

The ADA could not find evidence to support a guideline with a specific percentage of total energy from dietary fat. Based on expert consensus, it concluded that fat intake should be individualized with carbohydrate and monounsaturated fat together providing 60–70% of energy intake. It clarifies that, when determining the monounsaturated fat content of the diet, the individual's metabolic profile and need for weight loss should be considered. It cautions that increasing fat intake may result in increased energy intake. Furthermore, ethnic or cultural preferences may play a role in determining whether saturated fat is to be replaced with carbohydrate or monounsaturated fat.

Table 1.
Comparison of DRI, AHA, NCEP, ADA Nutrition Guidelines for Energy Sources

	Dietary Reference Intakes	American Heart Association	National Cholesterol Education Program	American Diabetes Association
Intended for	Healthy populations to meet the body's energy and nutritional needs	Healthy populations to lower risk of heart disease and stroke	People with dyslipidemia	People with diabetes
Major strength	Provides acceptable ranges for energy sources and, for the first time, an RDA for carbohydrate	Guidelines in terms of food selections make the guidelines easy to interpret to the general public	Nutrition therapy integrated into the overall management of dyslipidemia, especially therapeutic lifestyle changes for LDL cholesterol	Level of evidence supporting recommendations is clear; nutrition guidelines can be prioritized based on the strength of the evidence
Total dietary fat	20–35% of energy	For weight reduction, limit energy intake with ≤30% of energy as fat	25–35% of total energy	Fat intake should be individualized (expert consensus)
Saturated fat	Intake as low as possible	<10% of energy; if LDL cholesterol elevated or with CVD, <7% of energy	<7% of energy	In all, <10% of energy; if LDL cholesterol >100 mg/dl, <7% of energy (A level evidence)
Trans fat	Intake as low as possible	Total cholesterol-raising fatty acids not to exceed 10% of energy	Intake should be kept low	Intake should be minimized (A level evidence)
***n*-6 Polyunsaturated fatty acids**	Adequate intake for linoleic acid: 5–10% of energy	Substitute for saturated fats to lower LDL cholesterol	Up to 10% of energy	~10% of energy (C level evidence)
Monounsaturated fatty acids	Replace saturated fats along with polyunsaturated fats to reduce cholesterol	Substitute for saturated fats to lower LDL cholesterol	Up to 20% of energy	Monounsaturated fat and carbohydrate ~60–70% of energy (expert consensus)
Omega-3 fatty acids	Adequate intake for linolenic acid: 0.6–1.2% of total energy	Two servings of fish per week are recommended to confer cardioprotective effects	Higher intake may reduce risk for coronary events	Two or more servings of fish/week (C level evidence)
Cholesterol	Intake as low as possible	<300 mg/day; if LDL cholesterol elevated or with CVD, <200 mg/day	<200 mg/day should be eaten to maximize LDL cholesterol-lowering effect	In all, <300 mg/day; if LDL cholesterol >100 mg/dl, <200 mg/day (A level evidence)
Carbohydrate	45–65% of energy	Consume five or more servings per day of fruits and vegetables and six or more servings per day from a variety of grain products	50–60% of energy	Monounsaturated fat and carbohydrate ~60–70% of energy (expert consensus)
Total fiber	≤50 years of age: 38 g/day for men, 25 g/day for women >50 years of age: 30 g/day for men, 21 g/day for women	Insufficient data to recommend specific target; eating recommended foods can result in an intake >25 g/day	20–30 g/day	Consumption of fiber is to be encouraged; however, there is no reason to recommend that people with diabetes consume more fiber than other Americans (B level evidence)
Protein	10–35% of energy; RDA for both men and women is 0.8 g/kg of body weight/day	Although there are conditions in which extra protein may be needed (growth, pregnancy, lactation, and some disease states), an average of 15% total energy or ~50–100 g/day should be adequate to meet most needs	~15% of energy	No evidence to suggest that usual protein intake (15–20% of total energy) be modified if renal function is normal (B level evidence)

Saturated and trans fatty acids. The DRI report recommends that intake of saturated fatty acids and trans fatty acids be kept as low as possible while consuming a nutritionally adequate diet because many of the foods containing these fats also provide valuable nutrients. It notes that a nutritionally adequate diet is possible with only 5% of total energy from saturated fats. The DRI report points out that neither saturated nor trans fatty acids have a known beneficial role in preventing chronic disease, and neither are required at any level in the diet. Both increase the risk of heart disease in some people by raising the levels of LDL cholesterol, and this occurs even with very small quantities in the diet.

All three of the health organizations have similar guidelines for the desirable percentages of energy from saturated fat and for minimizing intake of trans fats (Table 1). The ADA notes that research supporting these guidelines is from the general population; studies in people with diabetes demonstrating the effects of specific percentages of saturated fatty acids (e.g., 10% vs. 7% of energy) and the effect of trans fat are not available in the scientific literature with elevated LDL cholesterol.

In patients with elevated LDL cholesterol treated with only nutrition therapy, lipids should be evaluated at 6-week intervals, with consideration of pharmacological therapy between 3 and 6 months. The maximal effect of nutrition therapy is typically reported to reduce LDL cholesterol by 15–25 mg/dl.[6] Thus, if LDL cholesterol exceeds the goal by >25 mg/dl, pharmacological therapy is generally needed in combination with lifestyle strategies.

Monounsaturated Fats, Polyunsaturated Fats, and Omega-3 Fatty Acids

Monounsaturated and polyunsaturated fatty acids reduce blood cholesterol concentrations when they replace saturated fatty acids in the diet. People must get two types of polyunsaturated fatty acids, linoleic acid (an omega-6 fatty acid) and alpha-linolenic acid (an omega-3 fatty acid), from the foods they eat because the body cannot make them. Studies have shown that populations with diets naturally high in alpha-linolenic acid and

longer-chain omega-3 fatty acids (common in countries where large quantities of fatty fish are eaten) have a decreased risk of cardiovascular disease. Additionally, individuals whose diets are naturally high in linoleic acids and longer-chain omega-6 fatty acids (commonly obtained from vegetable oils) have higher levels of HDL cholesterol, which is also protective of cardiovascular disease. Fatty fish, nuts, avocados, olives, flaxseed, soybeans, and various oils, including safflower, canola, and corn oil, are sources of these beneficial fatty acids.

The AHA notes that in the absence of weight loss, diets high in total carbohydrate (e.g., >60% of energy) can lead to elevated triglycerides and reduced HDL cholesterol. These effects do not occur with substitution of monounsaturated or polyunsaturated fats for saturated fat. NCEP suggests that monounsaturated fat can be up to 20% of total energy and polyunsaturated fat up to 10% of total energy.

The ADA is more cautious in recommending increased intake of monounsaturated or polyunsaturated fats. Diets high in monounsaturated fat or low in fat and high in carbohydrate result in improvement in glucose tolerance and lipids compared with diets high in saturated fats. Diets enriched with monounsaturated fat may also reduce insulin resistance.[7] However, other observational studies have reported total dietary fat (regardless of the type of fat) to be associated with insulin resistance.[8,9]

In people with type 2 diabetes and in the absence of weight loss, a diet high in total carbohydrate (e.g., >55% of total energy) leads to an elevation in triglycerides and a lowering of HDL cholesterol.[10] However, in other studies, when energy intake was reduced and a low-fat, high-carbohydrate diet was compared with a diet high in monounsaturated fat, there was no detrimental effect on triglycerides.[11,12] Energy intake, therefore, appears to be a factor in determining the effects of high-carbohydrate diets versus diets high in monounsaturated fat on triglycerides and HDL cholesterol.

The ADA recommends that an individual's metabolic profile and need to lose weight will determine nutrition therapy recommendations. For people who need to lose weight, a lower-energy intake and a low-fat, moderate-carbohydrate approach can be emphasized. For people who do not need to lose weight, an approach substituting monounsaturated fats for saturated fats may be used to improve triglycerides or postmeal glycemia (B level evidence).

A diet high in monounsaturated fat selected ad libitum may lead to higher energy intakes and weight gain. The major monounsaturated fat in the diet is oleic, and major dietary sources of oleic are the same as for saturated fat: dairy, beef, pork, poultry, and lamb. This means that when saturated fat is restricted, so is monounsaturated fat. Therefore, to increase monounsaturated fats, individuals need to add nuts and oils to their diets, and unless portion sizes are carefully monitored, total energy intake may be increased.

In general, research suggests that low-fat diets are usually associated with modest weight loss, which can be maintained as long as the diet is continued.[13] With this modest weight loss, decreases in total cholesterol and triglycerides and an increase in HDL cholesterol are observed. Therefore, the ADA concluded that reduced-fat diets when maintained over the long-term contribute to weight loss and improvements in dyslipidemia (B level evidence).

Omega-3 fatty acids. There is evidence from the general population that foods containing omega-3 fatty acids confer cardioprotective effects, and both AHA and ADA suggest that at least two servings of fish per week can be recommended.

The majority of studies in subjects with type 2 diabetes, however, have used omega-3 supplements, which lower triglycerides but slightly raise LDL cholesterol.[14,15] No detrimental effects on glycemia have been observed, but if supplements are used, the effects on LDL cholesterol should be monitored. Omega-3 supplements may be most beneficial in the treatment of severe hypertriglyceridemia.

Dietary Cholesterol

The DRI report notes that, along with saturated and trans fats, dietary cholesterol has no role in preventing chronic disease and is not required in the diet. Thus, intake should be kept as low as possible. The AHA found no evidence for cholesterol guidelines for all individuals but recommends <300 mg/day on average for the general public. It notes that by limiting cholesterol intake from foods high in animal fat, the guideline for saturated fat intake also will be met. The NCEP therapeutic lifestyle change (TLC) recommends <200 mg/day.

The ADA recommends that for all people with diabetes, dietary cholesterol should be <300 mg/day. Some individuals (i.e., those with LDL cholesterol >100 mg/day) may benefit from lowering dietary cholesterol to <200 mg/day (A level evidence). Preliminary observational evidence suggests that people with diabetes compared with nondiabetic subjects are more susceptible to risks from dietary cholesterol.[16] In people with diabetes, higher intakes of dietary cholesterol were associated with an increased risk of coronary heart disease. Therefore, it may be prudent for people with diabetes to be more conservative in limiting cholesterol-containing foods.

Carbohydrate and Fiber

Carbohydrate, which includes sugars and starches, provides energy to the cells of the body, particularly the brain. The DRI report sets the first Recommended Dietary Allowances for total carbohydrate for adults and children at 130 g/day, the minimum amount of carbohydrate needed to produce enough glucose for the brain to function. Most people typically exceed this daily amount, with the median intake of available carbohydrate ranging, depending on age, from ~200 to 300 g/day for men and ~180 to 230 g/day for women. However, individuals who follow very low-carbohydrate diets may not be getting enough carbohydrate from the food they eat.

All three organizations support the importance of foods containing carbohydrate, such as whole grains, fruits, vegetables, and low-fat milk, in a healthy diet. However, the ADA concludes that in regard to the glycemic effects of carbohydrate, the total amount of carbohydrate in meals or snacks is more important than the source (starch or sugars) or type (glycemic index) (A level evidence).

Dietary fiber. Various health benefits,

including increased laxation and lower blood glucose and cholesterol concentrations, have been ascribed to fiber in the diet. The DRI report for the first time makes fiber recommendations—men and women 50 years old and younger should have 38 and 25 g/day, respectively, of total fiber. The recommended intakes for men and women over 50 years of age are 30 and 21 g/day, respectively, because of decreased energy consumption among individuals in this age group. This amount was selected based on the amount that appears to be necessary to lower cardiovascular risk.

Recommendations for fiber vary among the other sets of guidelines. AHA acknowledges that soluble fibers modestly reduce total cholesterol and LDL cholesterol beyond what is observed from a diet low in saturated fat and cholesterol. However, it notes that there are insufficient data to recommend a specific target for fiber intake. Consumption of the recommended portions of grains, fruits, vegetables, legumes, and nuts can result in an intake of >25 g/day of fiber. NCEP recommends increasing viscous (soluble) fiber by 10–25 g/day in addition to eating a diet low in saturated fat, trans fat, and cholesterol to enhance lowering of LDL cholesterol.

The ADA questions whether the palatability and gastrointestinal side effects of fiber in the amounts needed to demonstrate favorable effects would be acceptable to most people over the long term. Average fiber intake is reported to be ~16 g/day for adult women and ~18 g/day for adult men. In support of fiber, a study comparing a diet that included 24 g/day with a diet containing 50 g/day of fiber reported improved glycemic control, reduced hyperinsulinemia, and decreased plasma lipids from 50 g/day and no beneficial effects from 24 g/day of fiber.[17] Based on results from this and other studies, it appears that large amounts of fiber are necessary to observe benefits.[18-20] In a meta-analysis of 67 controlled trials, the authors concluded that the effect of soluble fiber on total and LDL cholesterol, within the range of practical intake, is small.[21] The ADA concluded that although, just as for the general public, fiber intake is to be encouraged for its other health benefits, there is no reason for people with diabetes to consume more fiber than other Americans (B level evidence).

Energy Requirements and Weight Loss

Recognizing that maintaining an optimal weight to decrease the risk of chronic disease depends on balancing total energy consumption with energy expenditure, the DRI report targets a daily caloric intake based on the amount of physical activity an individual typically performs. The DRI report recommends for the first time that total energy expended be at least 1.6–1.7 times an individual's resting energy expenditure (considered an active lifestyle) to maintain body weight in the ideal range (body mass index [BMI] of 18.5–25 kg/m^2), as well as decrease the risk of cardiovascular disease.

The AHA stresses that prevention of weight gain (<5 kg), particularly between the ages of 25 and 44 years, is a high priority, and when BMI is excessive (>30 or >25 kg/m^2 with comorbidities), weight reduction between 5 and 10% can reduce the risk for heart disease and stroke. Because of the challenge of achieving long-term weight maintenance after weight loss, the AHA points to the importance of primary prevention of obesity. NCEP encourages weight reduction therapy for overweight and obese patients to enhance LDL cholesterol lowering.

The ADA acknowledges the benefits of modest weight loss, especially in improving insulin sensitivity, in the short term (A level evidence). However, long-term studies are not available to determine whether this benefit continues over the long term, probably because weight loss is difficult to maintain over the long term. Nutrition interventions such as standard weight-reduction diets, when used alone, are unlikely to produce long-term weight loss (A level evidence). Structured, intensive lifestyle programs that emphasize education, reduced fat and energy intake, regular physical activity, and regular participant contact are necessary to produce long-term weight loss on the order of 5–7% of starting weight (A level evidence).

Furthermore, modest weight loss is most beneficial for individuals who are insulin resistant and for the prevention of type 2 diabetes. Once diabetes develops, it often is too late for weight loss to improve glycemic control because weight loss improves insulin resistance, not insulin deficiency.[22] At this point, the focus on nutrition therapy must shift to lifestyle strategies that will improve glycemia, lipids, and blood pressure. Medications may need to be combined with nutrition therapy to achieve target glucose goals.

Summary

Regarding the original question: so many nutrition guidelines—contradictory or compatible? The answer is compatible, if you realize the population for which each set of guidelines is intended. The DRIs are intended for a healthy population, their objective being to provide for vitamins, minerals, macronutrients, and energy needs by identifying ranges such that consumption above or below these ranges may be associated with nutrient inadequacy and increased risk of developing chronic diseases including coronary heart disease, obesity, type 2 diabetes, and cancer. The AHA nutrition guidelines also are designed for the general population, with the objective being to decrease the risk of cardiovascular disease by dietary and other lifestyle practices. The NCEP ATP III updates clinical guidelines for cholesterol testing and clinical management of high blood cholesterol including nutrition therapy. The ADA report provides evidence-based principles and recommendations for nutrition therapy in the treatment and, for the first time, prevention of diabetes. Therefore, although all the organizations review the same research studies, depending on their objectives, they develop nutrition guidelines for their intended populations. ■

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Make the Link!
Patient Page

Making Wise Food Choices for a Healthy Heart

What does food have to do with heart health?

Diabetes raises your risk for heart disease and stroke. But you can help keep your heart and blood vessels healthy by making wise food choices. These steps can help:

- Eat less saturated fat and less trans fatty acids (also called trans fats).
- Have less total fat, especially if you're trying to lose weight.
- Choose the kinds of fat that can help lower your cholesterol levels.
- Cook without fat or with less fat.
- Eat foods that are high in fiber.

How can I cut back on saturated and trans fats?

Saturated and trans fats can raise your cholesterol levels. Saturated fat is the kind of fat found in meat, poultry skin, butter, 2% or whole milk, cream, cheese, lard, and shortening. Some oils used in packaged foods like crackers, such as palm oil and coconut oil, are also high in saturated fat. Nutrition labels tell you how much saturated fat and total fat are in a serving of food.

Wiser choices for your heart include these foods that are low in saturated fats:

- lean cuts of meat, skinless poultry, and fish
- 1% or skim milk
- low-fat cheese
- low-fat or fat-free salad dressings, mayonnaise, and sour cream

Trans fats are produced when liquid oils are turned into solids. Often, liquid oils are made into solids so that they are spreadable. This process is called hydrogenation. Avoid foods that list hydrogenated or partially hydrogenated oils as ingredients. These types of oils are found in crackers, baked goods, and stick margarine. By 2006, nutrition labels on foods will tell you how much trans fats are in a food serving.

How can I cut back on total fat?

You can check the nutrition labels on foods for information on total fat content and then choose lower-fat versions. Cooking with less fat can also help. When you eat out, choose low-fat foods, such as broiled fish instead of fried fish. Eating less fat can help you lose weight and improve your cholesterol levels.

Wise food choices: What to try and why

Instead of…	Try this…	Why?
Whole milk or 2% milk	**1% milk or skim milk**	less total fat, less saturated fat, and less cholesterol
Regular cheese	**low-fat cheese**	
Snack foods with hydrogenated oil, palm oil, or coconut oil	**fat-free or low-fat snack foods**	less total fat less saturated fat
Regular mayonnaise	**low-fat mayonnaise or mustard**	less total fat
Corn oil	**canola oil or olive oil**	lowers cholesterol
Fried chicken	**baked chicken**	less total fat less saturated fat
Bologna, salami, or pastrami	**sliced turkey or lean beef**	
Grilled steak	**grilled or baked salmon**	has omega-3 fatty acids

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Which kinds of fat help lower cholesterol?

If you use cooking oil, choose olive oil or canola oil. These types of oils, called monounsaturated oils, help lower your LDL (bad) cholesterol and raise your HDL (good) cholesterol. Monounsaturated fats are also found in nuts, avocados, and olives.

Polyunsaturated oils, such as corn oil, sunflower oil, or safflower oil, also lower your cholesterol levels. However, they don't raise your good cholesterol and therefore do not provide as much benefit as olive oil or canola oil.

The fat found in some fish, called omega-3 fatty acids, protects your heart. Try having mackerel, salmon, sardines, or tuna several times a week.

How can I cook without fat or with less fat?

Cook the low-fat way by broiling, microwaving, baking, roasting, steaming, or grilling foods. For stovetop cooking, try nonstick pans, cooking sprays, or stir-frying with a small amount of oil.

Which foods are high in fiber?

Whole grains, rolled oats, oat bran, dried beans and peas, prunes, apples, pears, oranges, and vegetables are good sources of fiber, a substance that may help lower your LDL (bad) cholesterol.

What steps can help me change the way I eat?

Start by thinking about what you're willing and able to do. Then choose one thing to try this week. For example, check the nutrition label on your favorite cheese for total fat content. Then try a lower-fat version. Next week, add another small change in what you eat. It takes time to change habits, but small changes do add up.

For more information about heart disease and diabetes, call the American Diabetes Association at **1–800–342–2383**.

My Action Plan for Making Wise Food Choices:

1. I'll cut back on saturated fat by eating less _____.
2. I'll cut back on total fat by eating less _____.
3. When I go out to eat, I'll have _____ instead of _____.
4. I'll try this way of cooking to cut down on fat: _____.
5. To have more fiber, I'll eat _____ _____ times a week.
(food) (number)

My Health Care Professional

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Key Global Literature

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Pan J, Van JT, Chan E, Kesala RL, Lin M, Charles MA: Extended-release niacin treatment of the atherogenic lipid profile and lipoprotein(a) in diabetes. *Metabolism* 51:1120–1127, 2002

FINDINGS

In this study, triglycerides, small dense LDL cholesterol particle concentration, LDL particle size, total HDL cholesterol (HDLc), and HDL-2 cholesterol concentration, as well as total LDL cholesterol (LDLc) and lipoprotein(a) [Lp(a)], were measured in 36 diabetic patients with primary abnormalities of LDL particle size (n = 25), HDL-2 (n = 23), and/or Lp(a) (n = 12) before and after extended-release niacin treatment. After extended-release niacin, LDL peak particle diameter increased from 25.2 ± 0.6 to 26.1 ± 0.7 nm ($P < 0.0001$), small dense LDLc concentration decreased from 30 ± 17 to 17 ± 10 mg/dl ($P < 0.0001$), total HDLc increased from 42 ± 9 to 57 ± 16 mg/dl ($P < 0.0001$), HDL-2 as the percent of total HDLc mass increased from 34 ± 10% to 51 ± 17% ($P < 0.0001$), and Lp(a) decreased from 37 ± 10 to 23 ± 10 mg/dl ($P < 0.001$). Mean A1C level surprisingly improved during treatment from 7.5 ± 1.6 to 6.5 ± 0.9% ($P < 0.0001$), perhaps due to the fairly aggressive hypoglycemic therapy used by the investigators. Lipid changes were independent of change in A1C. Of the patients, 22% were unable to tolerate extended-release niacin because of reversible side effects.

SIGNIFICANCE

Diabetes has previously been considered to be a relative contraindication to niacin treatment. Recent studies have demonstrated that extended-release niacin does not lead to deterioration in glycemic control, although adjustment of hypoglycemic therapy may be needed in some patients. This study demonstrates that extended-release niacin is particularly effective in treating diabetic dyslipidemia that is associated with abnormal LDL size, HDL-2, and Lp(a). These lipids constitute an "atherogenic lipid profile" and are frequently abnormal in patients with diabetes and patients with cardiovascular disease.

IMPACT

Extended-release niacin may be particularly useful for lipid particle abnormalities associated with diabetes that are now being assessed in clinical practice. ■

Manning PJ, Sutherland WH, Allum AR, de Jong SA, Jones SD: Effect of hormone replacement therapy on inflammation-sensitive proteins in postmenopausal women with type 2 diabetes. *Diabet Med* 19:847–852, 2002

FINDINGS

Postmenopausal women with type 2 diabetes (n = 61) were randomized to receive, double-blind, either continuous combined hormone replacement therapy (HRT) with conjugated equine estrogen (0.625 mg/day) plus medroxyprogesterone acetate (2.5 mg/day) or placebo for 6 months. Plasma C-reactive protein (CRP) increased (2.2 mg/l [95% CI 0.3–4.1]) significantly ($P = 0.02$) in women treated with HRT versus placebo. Plasma levels of cell adhesion molecules, interleukin-6, and leukocyte count did not change significantly during the study.

SIGNIFICANCE

The role of HRT in postmenopausal women remains controversial. Although beneficial for symptom relief, long-term HRT may increase the risk of cardiovascular events. The data from this study indicate that oral HRT with estrogen plus progesterone increases plasma CRP levels but not other inflammatory markers in postmenopausal women with diabetes. Because recent data suggest that an elevated CRP may be an important risk marker in both cardiovascular disease and the metabolic syndrome, these findings may be of importance in patients with diabetes.

IMPACT

HRT in women with diabetes may increase CRP levels. ■

FREE CD-ROM AVAILABLE

Management of Hypertension in Diabetes

Management of Hypertension in Diabetes, a 1-hour Web cast for physicians and nurses, was held during February and March 2003. This program featured a slide presentation by Dr. Vivian Fonseca, Professor of Medicine and Tullis-Tulane Chair in Diabetes at Tulane University Health Sciences Center, New Orleans, LA. After the presentation, an interactive Q & A session was moderated by Dr. Fonseca and Dr. George Bakris, Vice Chairman of the Department of Preventive Medicine at Rush-Presbyterian-St. Luke's Medical Center and Professor of Preventive Medicine and Internal Medicine at Rush Medical College, Chicago, IL. Both Drs. Fonseca and Bakris are members of the American Diabetes Association's Professional Practice Committee.

If you missed your chance to discuss this subject live, no worries. You can view an archived program at **www.diabetes.org/MakeTheLink**. Or you can order an audio CD or tape cassette, which both feature the discussion, Q & A segments, and CME forms. To order, visit **www.diabetes.org/MakeTheLink** or call **888-344-8447**.

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