



DEPARTMENT OF VETERANS AFFAIRS
Veterans Health Administration
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UNDER SECRETARY FOR HEALTH'S INFORMATION LETTER

EFFICACY OF HIGH-PROTEIN LOW-CARBOHYDRATE DIET IN PROMOTING
WEIGHT LOSS

1. **Purpose.** This Information Letter is intended to provide information regarding the use of high-protein low-carbohydrate diets as a weight management tool. The marketing of these diets and their low-carbohydrate food products has appealed to the general public, as well as health-conscious veterans because of the implications for significant health benefits from weight loss. Increased awareness by health care providers about these diets and the terms used to describe the carbohydrate content of food items will better prepare them to provide guidance to veterans who may be obese and/or have diabetes.

2. **Background**

a. Throughout history, health care professionals have seen the popularity of high-protein low-carbohydrate diets wax and wane. Over the past few years there has been an upsurge of interest in the low-carbohydrate approach to weight loss. A multitude of books and weight loss programs are based on the idea that carbohydrates raise blood sugar and that this promotes weight gain and obesity. These high-protein low-carbohydrate diets promote high intake of saturated animal fat, which dietitians have raised as a concern for years because of the potential impact on the heart. Dr. Atkins' New Diet Revolution by Robert C. Atkins, MD, The Zone by Barry Sears, Sugar Busters by Leighton Steward, Sommersizing by Suzanne Somers, and Good Carbs, Bad Carbs by Johanna Burani and Linda Rao are a few of the more popular diets. The South Beach Diet by Arthur Agatston, MD, notable cardiologist, prescribes a high-protein, low-carbohydrate diet, but promotes healthier fat choices. These weight loss programs incorporate the principles of the glycemic index, which is research correlating the effect of individual foods on glucose levels. The authors advise followers to choose low-glycemic index foods, i.e., oatmeal, whole wheat bread, lentils, etc., over high-glycemic index foods, i.e., potatoes, pasta, dry cereals, grains, etc., claiming that high-glycemic index foods cause a greater insulin response, which leads to more fat deposition and hunger. See website: www.joslin.harvard.edu/education/library/glycemic_index.shtml.

b. The American Diabetes Association published a position paper indicating that there was no conclusive evidence for the use of low-glycemic index foods on either Type I or Type II diabetes, because the effects of a mixed food diet appear to change the glycemic index of the meal versus an individual food. However, some studies are evaluating the effect of eating foods with lower-glycemic index ratings for individuals diagnosed with diabetes and insulin resistance.

More research needs to be accomplished before recommendations can be made to follow a low glycemic index diet for diabetes treatment.

(1) Food Labeling

(a) The grocery manufacturers producing low-carbohydrate products have created labeling phrases to help market their products as acceptable items for those following low-carbohydrate diets. These labeling terms are “net carb,” “low carb,” and “impact carb.” *NOTE: The terms “net carb” and “impact carb” are not regulated by the Food and Drug Administration (FDA).* The definitions for these terms, created by the manufacturers of the products, are not uniformly defined. The low-carbohydrate diet craze has prompted many food manufacturing companies to market their product lines as being low in carbohydrates. Other companies selling healthy foods such as citrus juices, have had to launch nationwide ad campaigns in an effort to counter low-carb diets that discourage drinking products such as orange juice, due to its carbohydrate content.

(b) The term “net carb” was first coined by Dr. Atkins, but now is enjoying much more widespread use. To determine a product’s “net carb” content, the dietary fiber and sugar alcohols are subtracted from the total carbohydrates listed on the food label. To date, minimal research has been done to determine what effect these ingredients have on blood sugar, weight, or digestion. It is known that soluble fibers and small amounts of polydextrose are metabolized by colonic bacteria. If one consumes a large amount of these fibers, such as the amount added to low-carbohydrate foods to offset the carbohydrate content, one could potentially experience significant flatus, bloating, and diarrhea. In addition, consumption of sugar alcohols in large amounts is also known to have a laxative effect and may cause diarrhea in adults and children.

(2) Research. Recent studies have evaluated the use of diets that include specific amounts of nutrients in order to determine if there is a preferential diet composition that best promotes weight loss. The high-protein, low-carbohydrate diet is one such diet that has been studied. *NOTE: Researchers are not consistent in the amount of carbohydrate considered to be a low-carbohydrate diet. The long term effects of high-protein, low-carbohydrate diets have not yet been published.*

(a) The first study was a 1-year, multi-center randomized controlled trial in which 63 obese men and women were randomly assigned to either a low-carbohydrate, high-protein, high-fat diet or a low-calorie, high-carbohydrate, low-fat diet. The low-carbohydrate diet restricted carbohydrate to 20 grams of carbohydrate per day for the first 2 weeks and then slowly increased the amount until weight stabilized. The conventional low-calorie diet consisted of calories that were 60 percent carbohydrate, 25 percent from fat, and 15 percent from protein. Participants in the low carbohydrate group lost significantly more weight at 6 months, but this difference was not significant at 12 months. It should be noted that this was a small study, with an attrition rate of 41 percent.

(b) In another study, researchers at the Department of Veterans Affairs (VA) Medical Center, Philadelphia, PA, followed 132 obese adult outpatients for a year. Half of the participants were told to follow a low-carbohydrate diet, eating less than 30 grams of carbohydrates per day. The others were told to follow a more conventional plan, cutting 500

calories per day and limiting fat to 30 percent of calories. The researchers found that dieters on low-carbohydrate plans did not lose more weight over the long term than traditional dieters. The low-carbohydrate dieters had a decrease in triglycerides and those with diabetes in the group had better control of their blood sugar. The improvement in triglycerides, which is a risk factor linked to coronary disease, is good news for carbohydrate counters. However, other studies have recently reported some low-carbohydrate dieters experiencing increases in triglycerides and other lipid components. Clearly more research is needed before conclusions can be drawn.

(c) A third study looked at the adherence to a low-carbohydrate diet for 6 months. The study placed 51 overweight or obese participants on a diet containing less than 25 grams per day of carbohydrates, with no limit on caloric intake. After 6 months, there was a mean weight loss of 9 kilograms, which corresponds to weight loss of 0.5-1.0 pound per week. This rate of loss is similar to the amount experienced by those following a conventional weight loss approach. There was a 20 percent attrition rate in the study.

(d) The research available regarding the validity of using the glycemic index as a tool for weight loss is also weak, supporting only the conclusion that the issue requires further research.

(e) A study from Arizona State University points to a possible reason for the popularity of the high-protein low-carbohydrate diet, despite research showing that these diets do not result in significantly more weight loss. In the study both diets were equally effective in promoting weight loss in the short 6-week trial; however, participants reported greater satisfaction with the high-protein, low-carbohydrate diet. This is likely due to the greater satiety value of the high-fat composition diet over the high-carbohydrate diet. Again, the type of fat being consumed may be an important factor to evaluate.

(f) Research is not conclusive regarding the effects specific diets have beyond the question of weight loss. Long-term use of diets similar in content to the high-protein, low-carbohydrate diet has been associated with increased incidence of colorectal cancer, constipation, heart disease, impaired kidney function, ketosis, loss of energy and concentration, gout, gallbladder problems, and osteoporosis. Therefore people choosing to follow a high-protein low-carbohydrate diet with any of these pre-existing conditions may be at a greater risk for developing complications of these conditions. Other researchers have also noted that the traditional low-carbohydrate diet is deficient in vitamins, minerals, and dietary fiber. Long-term effects of these deficiencies have not been studied.

3. Recommendations. In response to the recent increased incidence of diabetes and obesity among veterans, healthcare professionals need to provide current information to veterans and advise them regarding the use of specific diets. Attaining a more desirable weight is a complex issue that involves assessing a person's risk factors, body measurements, genetic pre-dispositions, lifestyle habits, and potential to make change. It is not prudent to recommend fad diets when the research has not clearly shown that one diet is superior to another. The FDA presently has no definition of what constitutes low-carb foods, like the specific guidelines that control the use of the terms low-fat and low-calorie foods. The FDA has asked its Obesity Group led by Dr. Lester M. Crawford, DVM, PhD, FDA Deputy Commissioner, to bring order to

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the carb confusion. Recommendations are expected within a few months. In the meantime, the following guidance is provided:

a. Health care professionals, i.e., Registered Dietitians (RDs) and Certified Diabetes Educators (CDEs), need to continue to advocate healthy life-long weight management through daily physical activity in combination with a diet relatively low in fat, moderate in protein, and rich in complex carbohydrates such as fruits, vegetables, and whole grains.

b. The Dietary Reference Intakes, published in September 2002 by the National Academy of Sciences Institute of Medicine, state that to meet the body's daily energy and nutritional needs while minimizing risk for chronic disease, adults need to get 45-65 percent of their calories from carbohydrates, 20-35 percent from fat, and 10-35 percent from protein. To promote healthy weight loss, a moderate caloric deficit of 500 kilocalories per day needs to be achieved by reducing total intake and increasing regular physical activity. Calories should not be restricted to less than 800 calories per day in a healthy diet pattern.

c. The National Heart, Lung and Blood Institute (NHLBI) publishes extensive resources for clinicians to use when assessing obesity risk and recommending calorie guidelines. These are available on their website (www.nhlbi.nih.gov) .

d. Long-term monitoring and support to maintain weight loss requires regular clinic visits, group meetings or encouragement via telephone, letters, or other contacts. Physical activity needs to be part of lifestyle changes, whenever possible. A multi-disciplinary team approach to diet, motivation, physical activity, and pharmaceuticals for achieving weight loss will likely be the most successful.

e. VA is developing and piloting a standardized evidence-based national weight management and physical activity program for VHA entitled Managing Overweight and/or Obesity for Veterans Everywhere (MOVE!), which incorporates all of the recommendations referred to in this Information Letter. Information regarding the MOVE! Program is available by contacting the National Center for Health Promotion and Disease Prevention (NCHPDP), Durham, NC, at (919) 383-7874 or at their website address: <http://www.nchpdp.med.va.gov/MOVEIntro.asp>.

f. Weight loss therapy is not appropriate for all peoples and individuals need to be evaluated for conditions that preclude attempting weight loss. Some of these conditions are pregnancy, lactation, treatment of major depression or serious physiological disorder, eating disorders, and serious illness.

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5. Inquiries. Questions may be referred to the Office of Patient Care Services, Nutrition and Food Service (111) at 202-273-8516.

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