



# THE 2015 DIETARY GUIDELINES FOR AMERICANS: *Reading Between the (Guide) Lines*

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## INTRODUCTION

Every five years since 1980, the U.S. Departments of Agriculture (USDA) and Health and Human Services (HHS) have jointly released Dietary Guidelines for Americans more than 2 years old. The 2015-2020 edition was issued in January 2016 and, as always, aims to provide the best available dietary recommendations. Although the relevant scientific evidence has traditionally been provided in a scientific report from the Dietary Guidelines Advisory Committee (DGAC), there was unprecedented involvement in the current guidelines by the U.S. House of Representatives, which asked the Academy of Medicine (formerly the Institute of Medicine) to review the scientific evidence.

This article provides excerpts from the current guidelines, followed by my critical comments, which not only highlight salient points and changes in the guidelines, but also hopefully provide greater insight into the complex topic of nutrition.

## QUOTES FROM THE GUIDELINES

### CALORIE BALANCE

*“For a weight loss of 1 to 1½ pounds per week, daily intake should be reduced by 500 to 750 calories. Eating patterns that contain 1,200 to 1,500 calories each day can help most women lose weight safely, and eating patterns that contain 1,500 to 1,800 calories each day are suitable for most men for weight loss.”<sup>1</sup>*

**Author’s critique:** The “calorie is a calorie” concept stems from the Energy Balance Theory and is so pervasive as to be almost sacrosanct. It has been supported by the USDA guidelines since 1980, and by every major dietary institution, as well as the National Cancer Institute, the Centers for Disease Control, Academy of Nutrition & Dietetics (formerly The American Dietetic Association), and others. The problem is not the first law of thermodynamics on which the theory is based, but the interpretation of the law. As applied to the field of nutrition the law states that the change in fat mass of a person is equal

to the difference between energy consumed and energy expended, but this mathematical principle does not consider the direction of cause and effect, so it does not indicate whether obesity is the result of overeating and inactivity or their cause. Although the vast majority of obesity experts presume the former mechanism, either explanation conforms to the first law.

Moreover, though many discussions of how to lose weight ignore hunger and assume that the variables “energy in” and “energy out” are mutually exclusive, when we create a daily caloric deficit we become hungry and tend to be more sedentary, irritable, and even depressed. (Ancel Keys reported on the effects of an experimental starvation diet in 1950.)<sup>2</sup> Conversely, increased exercise can provoke a greater appetite as the body works to replace the calories lost. Calories are energy, and we cannot ignore what it means to ask an obese person to maintain a negative caloric balance by consuming less while burning more—not for a few days or weeks, but possibly a lifetime. What one eats actually changes how one expends energy. Similarly, how one expends energy changes what one eats! Thus, is a calorie just a calorie? Will a can of Coca-Cola and a can of tuna fish be metabolized in the same way simply because they both contain 140 calories? Obviously not. The overemphasis on calorie *quantity* at the expense of calorie *quality* places complete responsibility on the consumer, while exonerating certain food items from being labeled as inherently fattening and adding to the obesity epidemic.

## FOOD GROUPS

### (VEGETABLES, FRUITS, DAIRY, PROTEIN FOODS, AND OILS)

#### A. VEGETABLES

*“Healthy eating patterns include a variety of vegetables from all of the five vegetable subgroups—dark green, red and orange, legumes (beans and peas), starchy, and other.”*

**Author’s critique:** I strongly support this recommendation. Leafy greens are very nutritious, and though organic and local selections are ideal, they

aren't absolutely necessary. Frozen vegetables are also fine; canned vegetables should be rinsed with water whenever possible to remove most of the salt preservative; and vegetables in general should have limited amounts of salt, butter, and creamy sauces as stated in the guidelines.

The recommended portion size of 2.5 cup-equivalents daily is confusing and potentially misleading. It would have been better to simply emphasize the vital role of vegetables and simplify the serving size to a 1/2 plate with each meal.

## B. FRUITS

*"Healthy eating patterns include fruits, especially whole fruits. The fruits food group includes whole fruits and 100% fruit juice."*

**Author's critique:** I agree that whole fruits are healthful, but there is no such thing as a healthy fruit juice, no matter how fresh, organic, or all-natural. Even 100% fruit juice without added sugar contains abundant fructose sugar without any of the protective fiber found in whole fruit. Although whole fruit and fruit juice both contain vitamin C and potassium, consumption of fruit juice is associated with increased body weight and diabetes mellitus,<sup>3,5</sup> while the consumption of whole fruits is not.<sup>6,7</sup>

It is easy to drink 20 fluid ounces of apple juice, but no one would consume 5 to 7 apples in one sitting. Fiber not only blunts the blood sugar response to food intake, but it is nature's method of putting a brake on overeating! Few realize that 8 fluid ounces of orange juice or Coca-Cola contain the same amount of sugar. Eat the fruit, but don't drink the juice!

## C. GRAINS

*"Healthy eating patterns include whole grains and limit the intake of refined grains and products made with refined grains...The recommended amount of grains in the Healthy U.S.-Style Eating Pattern at the 2,000-calorie level is 6 ounce-equivalents per day. At least half of this amount should be whole grains."*

**Author's critique:** I disagree with the recommendation that at least half of Americans' grain consumption should be whole grains—I submit that all of the grain consumed should be whole grain. Refined grains have been stripped of bran and germ—i.e. fiber, iron, and other nutrients, and enriching does not restore fiber. The guidelines add that if one consumes only whole grains, then one should consider adding enriched grains to the diet for folic acid (the synthetic

form of vitamin B<sub>9</sub>). This seems a poor trade. I recommend consuming only whole grains and getting the more bioavailable form of vitamin B<sub>9</sub>, folate, from natural sources, such as vegetables and fruits (especially tropical), which contain more vitamin B<sub>9</sub> than typical grains.

Unfortunately, it is hard for consumers to distinguish true whole grain from impostors. Unless there is a Whole Grains Council label on the item that states "100% WHOLE GRAIN,"<sup>8</sup> the consumer is expected to know that a standard serving size of 1 ounce is equivalent to 28 grams—and a product is considered "whole grain" if it contains at least 16 grams per 28 gram serving. A food containing 8 grams per 28 gram serving is considered half of whole grain. Even more confusing, the food's whole grain content is on the manufacturer's label, which is typically on the opposite side of the FDA Nutrition Facts label. Also, the FDA departs from the Whole Grains Council and defines a whole grain product as simply one that contains 51% of the grain as whole grain (by dry weight).

Finally, the designation "whole grain" says nothing about sugar content. Corn Chex and Cocoa Puffs are both whole grain by FDA criteria, but Cocoa Puffs contain 3.5 times as much sugar!

## D. DAIRY

*"Healthy eating patterns include fat-free and low-fat (1%) dairy, including milk, yogurt, cheese, or fortified soy beverages. Other products sold as "milks" but made from plants may contain calcium and be consumed as a source of calcium, but they are not included as part of the dairy group because their overall nutritional content is not similar to dairy milk and fortified soy beverages."*

**Author's critique:** The updated guidelines echo the 2010 recommendations for consuming fat-free and 1% milk, milk products, and fortified soy milk. Although these fat-free products are in fact more processed (less natural) than full-fat and 2% dairy sources, the guideline's unwavering focus on calorie restriction resounds in their recommendation to reduce fat consumption. Contrary to the mantra "a calorie is a calorie," data suggest that the increased consumption of high-fat dairy may be inversely associated with obesity<sup>9</sup> and type 2 diabetes mellitus.<sup>10</sup>

Additionally, I cannot completely agree that plant-derived milk alternatives are inferior to cow and soy milks nutritionally. Although inferior to these milks in protein content, the increasingly popular almond milk contains as much vitamins A & D and even

more calcium than its rivals. Unlike cow's or soy milk, almond milk contains no saturated fat! And unlike cow's milk there are no hormones or antibiotics in soy milk or the milk alternatives.

#### E. PROTEIN

*“Healthy eating patterns include a variety of protein foods in nutrient-dense forms. The protein foods group comprises a broad group of foods from both animal and plant sources and includes several subgroups: seafood, meats, poultry and eggs; and nuts, seeds, and soy products. Legumes (beans and peas) may also be considered part of the protein foods group as well as the vegetables group.”*

**Author's critique:** These guidelines group together all meats, seafood, and poultry, regardless of fat content or processing despite the 2015 World Health Organization recommendations that called attention to the carcinogenic nature of processed and red meats.<sup>11</sup> Anyone who consumed primarily meats for protein would quickly reach the recommended limit for saturated fat, so the USDA should have simply recommended reduced intake of red meats, especially processed meats. The guideline's recommendation to consume a variety of protein foods in nutrient-dense forms cannot be overemphasized.

#### F. OILS

*“Oils should replace solid fats rather than being added to the diet. The recommendation for oils in the Healthy U.S.-Style Eating Pattern at the 2,000-calorie level is 27 g (about 5 teaspoons) per day.”*

**Author's critique:** The current guidelines recommend monounsaturated and polyunsaturated oils (fats), while simultaneously demonizing solid fats such as coconut oil, palm kernel oil, and butter due to their high saturated fat content. This recommendation remains hotly debated and warrants further research. The human body is capable of producing all the required fatty acids except two essential polyunsaturated fatty acids (PUFAs): linoleic acid (LA), an omega-6 fatty acid which is felt to be pro-inflammatory and increase risk of cardiovascular disease, and alpha-linolenic acid (ALA), an omega-3 fatty acid which is felt to be anti-inflammatory and to decrease risk of cardiovascular disease.<sup>12,13</sup> Data suggest a positive correlation between an increased ratio of dietary omega-6/omega-3 fatty acids and cardiovascular disease, as well as other chronic disease states.<sup>14</sup>

While PUFAs in general have been shown to reduce cardiovascular disease,<sup>15</sup> skeptics contend that

heavily processed and “unnatural” vegetable oils are high in omega-6 fatty acids and in fact increase risk of cardiovascular disease<sup>16</sup> and cancer—particularly when heated.<sup>17</sup> This phenomenon is problematic, since the average American's diet is already skewed toward the pro-inflammatory omega-6 fatty acids. I recommend consuming food sources rich in omega-3 such as wild caught salmon and other seafood, flax and chia seeds, and even grass-fed beef occasionally. Meanwhile, I would avoid omega-6 from sources such as junk food, fast food, vegetable oil, corn-fed beef, and processed meats. When cooking, I would opt for either limited amounts of olive oil (high monounsaturated fat content) or a minimally processed, solid fat such as natural butter or coconut oil (despite their saturated fat content). Other considerations may include a non-oil substitute such as wine, sherry, broth, vinegar, or even plain water.

#### G. OTHER DIETARY COMPONENTS (ADDED SUGARS, FATS, CHOLESTEROL, SODIUM, AND ALCOHOL)

1. *“Consume less than 10% of calories per day from added sugars. Added sugars include syrups and other caloric sweeteners. Naturally occurring sugars, such as those in fruit or milk, are not added sugars.”*

**Author's critique:** The intake of added sugar has increased markedly in the United States and has been linked to obesity and its related metabolic chronic disease states.<sup>18-22</sup> Unfortunately, the FDA Nutrition Facts label provides no “% Daily Value” listing for sugar, nor any distinction between naturally occurring and added sugar. The USDA guidelines do finally (and belatedly) follow the WHO and the AHA in placing a specific limit on sugar, which will hopefully lead to correcting the deficiencies of the Nutrition Facts label. In the interim, as medical providers we should highlight for our patients the meaning and practical application of “10% of calories/day from added sugars.” One 20 fluid ounce bottle of Coca-Cola has 65 grams of added sugar, which by itself provides 130% of the recommended daily limit of 200 calories from sugar (10% of a standard 2,000 calorie diet).

2. *“Saturated fats should be limited to less than 10% of calories per day.”*

**Author's critique:** This statement is unchanged from the previous dietary guidelines. I have previously discussed the literature on saturated fat extensively in this Journal.<sup>23</sup> Effective reduction of cardiovascular disease via substitution of saturated fat requires consideration of both the source of saturated fat (i.e.

processed meats and cheeses or natural butter, corn-fed or grass-fed beef, etc), and what is replacing it (i.e. whole grains vs. refined grains and sugar).

3. *“Individuals should limit intake of trans fats to as low as possible by limiting foods that contain synthetic sources of trans fats.”*

**Author’s critique:** This statement is unchanged from the previous dietary guidelines. Although trans fatty acids occur naturally in foods of animal origin, the majority of its consumption to date has been from synthetic sources. Despite mounting evidence of the role of trans fats in cardiovascular disease (CVD),<sup>24-27</sup> a “low as possible” limit was not placed on trans fat until the 2005 USDA guidelines, and it appeared on the Nutrition Facts label in 2006. Proponents and skeptics of the diet-heart hypothesis agree that the consumption of trans fat absolutely increases CVD.<sup>28-30</sup> Given the FDA’s three-year plan to remove it from the US food supply, I am surprised that the guidelines did not state clearly that synthetic trans fats should not be consumed. Furthermore, the FDA Nutrition Facts label may list certain foods (such as powdered coffee creamer) as having “zero trans fat” even when they contain partially hydrogenated vegetable oil, because the FDA permits the rounding (up or down) of any nutrient or additive by 0.5 mg per serving. The general consumer may not know this fine detail.

4. *“The Key Recommendation from the 2010 Dietary Guidelines to limit consumption of dietary cholesterol to 300 mg per day is not included in the 2015 edition.”*

**Author’s critique:** The updated guidelines have dropped the numerical limitation on dietary cholesterol consumption, but still recommend that individuals consume as little dietary cholesterol as possible, based on effects of dietary cholesterol on serum LDL, as previously stated by the Academy of Medicine.<sup>31</sup>

I agree with dropping the numerical limits on dietary cholesterol for multiple reasons. There is substantial variability in individual responses to dietary cholesterol, and it has very little impact on blood cholesterol levels in roughly 75% of the population. (Even Ancel Keys, the creator of the diet-heart hypothesis, stated as much in 1965.)<sup>32</sup> For the remaining 25% of people who respond to dietary cholesterol with detectable changes in serum lipid levels, the increase in LDL cholesterol appears to represent a shift to less atherogenic large, buoyant LDL particles<sup>33,34</sup> and large HDL particles,<sup>35</sup> and significant shifts in the LDL/HDL ratio are seldom seen.<sup>36-38</sup> This effect may explain why several

studies have found no association between dietary cholesterol and coronary heart disease (CHD), especially when concomitant intake of saturated fatty acid is low.<sup>39</sup> Unfortunately, dietary cholesterol and saturated fat often get grouped together as co-conspirators in CHD. Keep in mind that eggs and most shellfish are high in dietary cholesterol but have very little saturated fat, unlike fatty red and processed meats.

We must also consider that a restriction on dietary cholesterol could mean increased consumption of unhealthy alternatives such as refined carbohydrates, simple sugars, saturated fat, and/or trans fats.

5. *“Healthy eating patterns limit sodium to less than 2,300 mg per day for adults and children ages 14 years and older, and to the age and sex-appropriate Tolerable Upper Intake Levels (UL) of sodium for children younger than 14 years.”*

**Author’s critique:** This recommendation is essentially unchanged from the 2010 guidelines aside from their removal of specified salt restrictions for special populations. I am pleased to see their encouragement of the DASH (Dietary Approaches to Stop Hypertension) diet, but they fail to emphasize that the primary culprit is not the salt shaker at home, but rather processed food. Americans cook less at home, and rely increasingly on dining out. Additionally, modern time constraints and de-emphasis on home meal/snack preparation have created an overreliance on processed foods, which now occupy the majority of shelf space among the middle aisles of supermarkets. Americans can meet two guideline goals by eating more vegetables and fruits: they will reduce sodium intake *and* meet the daily recommendation for vegetables and fruits!

6. *“If alcohol is consumed, it should be consumed in moderation—up to one drink per day for women and up to two drinks per day for men.”*

This recommendation is identical to the recommendation from the 2010 guidelines. One alcoholic drink-equivalent contains 14 grams (0.6 fluid ounces) of pure alcohol, which translates into 12 fluid ounces of regular beer (5% alcohol), 5 fluid ounces of wine (12% alcohol), or 1.5 fluid ounces of 80 proof (40% alcohol) distilled spirits. The guidelines do not encourage drinking, and pregnant women should not consume alcohol.

**Author’s critique:** There is not much to add here. Obviously, alcohol consumption is not part of an effective weight loss strategy given its high caloric content coupled with marginal nutritional value. If alcohol is

consumed, my advice is to follow the guideline but choose red wine given its high concentration of polyphenols such as resveratrol, which provide a modest anti-oxidant effect on the body.

## CONCLUSIONS

Despite my critiques, I think that the 2015 USDA Guidelines have made progress in their recommendations for those who desire a healthier diet. I specifically applaud their use of dietary patterns, food swap diagrams, and the desperately needed restriction on consumption of added sugar. Unfortunately, many recommendations remain opaque, and this problem is compounded by lax FDA regulations on food marketing claims, and discrepancies between the guideline

recommendations and the FDA Nutrition Facts Panel. My hope is that Americans will become more aware that the terms “junk food” and “fast food” are not limited to Twinkies and McDonald’s, but include most products at the grocery store. A proper diet is not just a matter of eating less “food,” but emphasizing nutritional quality. When quality becomes the top priority, nutritional starvation will end, the distortion in appetite will be corrected, and satiety will be restored. Consumers will then be able to ward off misleading health claims on ready-made foods, understand the importance of home food preparation, and consume foods that are so natural, healthy, and unprocessed that they do not require the guidance of an FDA Nutrition Facts Panel.

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