

May 8, 2015

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The Honorable Thomas J. Vilsack  
Secretary of Agriculture  
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Washington, DC 20250

*Re: Comments on the Scientific Report of the 2015 Dietary Guidelines Advisory Committee*

Dear Secretaries Burwell and Vilsack,

The Academy of Nutrition and Dietetics (the “Academy”) appreciates the opportunity to submit comments to the United States Department of Health and Human Services (HHS) and the United States Department of Agriculture (USDA) on the Scientific Report of the 2015 Dietary Guidelines Advisory Committee (the “Committee” or DGAC) (the “Scientific Report”) released February 23, 2015. Representing over 90,000 registered dietitian nutritionists (RDNs),<sup>1</sup> nutrition dietetic technicians, registered (NDTRs), and advanced-degree nutritionists, the Academy is the largest association of food and nutrition professionals in the United States and is committed to improving the nation’s health through food and nutrition across the lifecycle. Our members have helped conduct, review, and translate nutrition research for the forthcoming Dietary Guidelines for Americans (the “Dietary Guidelines” or DGA) and will work to help consumers, industry, schools, and others choose meal patterns in accordance with the final recommendations.

**The Academy commends the DGAC for drafting a strong, evidence-based Scientific Report outlining the Committee’s science-based recommendations and rationale for the forthcoming 2015 Dietary Guidelines.** We also recognize the contributions of the executive secretaries, policy officials, Dietary Guidelines management team, Nutrition Evidence Library team, Data Analysis team, and other Dietary Guidelines staff for their contributions in creating this essential resource. The DGAC appropriately developed and directed recommendations for improving the nutrition and diets of Americans at the entities and individuals most able to effect the respective changes, whether on micro or macro levels. The Academy supports these recommendations that will improve how and what Americans eat. Our comments below reflect the Academy’s considered analysis of the most current literature and the purposes of the Dietary Guidelines.

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<sup>1</sup> The Academy recently approved the optional use of the credential “registered dietitian nutritionist (RDN)” by “registered dietitians (RDs)” to more accurately convey who they are and what they do as the nation’s food and nutrition experts. The RD and RDN credentials have identical meanings and legal trademark definitions.

## I. DGAC Fulfilled the Mandates of Its Charter

### A. *The Nutrition Evidence Library and Systematic Reviews*

The Charter of the 2015 DGAC provides in part that “[t]he USDA Nutrition Evidence Library (NEL) will assist the Committee in conducting and creating a transparent database of systematic reviews reflecting the most current research available on a wide range of food and nutrition-related topics to inform its recommendations.”<sup>2</sup> The evidence-based systematic review of the literature was vital to the DGAC’s assessment of the science. We commend HHS and USDA for their commitment to the NEL and their ongoing efforts to strengthen the evidence-based approach for assessing the scientific literature for future dietary recommendations. The Academy encourages the federal government to enhance its investment in critical food and nutrition research to build on this initiative. We note that despite continual enumeration of the same research gaps by previous DGACs, the research has not been done and the gaps remain.<sup>3</sup> Accordingly, we reiterate our previous recommendation that the USDA and HHS form an advisory group to address this concern; work with NIH and NIFA to make funding available to conduct this research; define best practices and methodologies to address the identified needs; and establish a process to identify lingering research needs.

The Academy notes the usefulness of the new NEL Bias Assessment Tool (NEL BAT) to effectively evaluate the risk of bias in studies included in systematic reviews and endorses its use in the future. The NEL BAT was developed in collaboration with the Academy and USDA by convening a panel of four experts in systematic review and risk of bias. The expert panel directed creation of the NEL BAT as an instrument focusing on risk of bias; it is based on questions from other validated risk of bias instruments used to assess randomized clinical trials, non-randomized controlled clinical trials, and prospective cohort studies. The panel also reviewed the revised tool for face and content validity, revising or confirming the applicability of each question to each study design to create the final NEL BAT.<sup>4</sup>

### B. *DGAC Recommendations Appropriately Change with Emerging Science*

The Academy supports the decision by the 2015 DGAC not to carry forward previous recommendations that cholesterol intake be limited to no more than 300 mg/day, as “available evidence shows no appreciable relationship between consumption of dietary

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<sup>2</sup> Charter of the 2015 Dietary Guidelines Advisory Committee. Dietary Guidelines website. Available at <http://www.health.gov/dietaryguidelines/dgac2015-charter-final.pdf> Approved January 9, 2013. Accessed May 8, 2015.

<sup>3</sup> Myers E, Khoo C, Murphy W, Steiber A, Agarwal S. A Critical Assessment of Research Needs Identified by the Dietary Guidelines Committees from 1980 to 2010. *Journal Of The Academy Of Nutrition & Dietetics* [serial online]. July 2013;113(7):957-971.e1. Available from: SPORTDiscus with Full Text, Ipswich, MA. Accessed April 27, 2015.

<sup>4</sup> The Academy would like to acknowledge the following individuals for their valuable contributions to this instrument: Nancy Berkman, PhD (expert panelist), Meera Viswanathan, PhD (expert panelist), Belinda Burford, PhD (expert panelist), Tatyana Shamliyan, MD (expert panelist), Alison Steiber, PhD, RDN (principal investigator), Mei Chung, PhD, MPH (methodological consultant), William Murphy, MS, RDN (co-investigator, project coordinator).

cholesterol and serum cholesterol.”<sup>5</sup> Despite some criticism suggesting that this changed recommendation illustrates fundamental questions about the validity of the nutrition science upon which the Dietary Guidelines are based, the change is both consistent with current science and the DGAC’s statutory mandate.

The DGAC is authorized under 42 U.S.C. 217a, Section 222 of the Public Health Service Act, as amended, with subsection (a)(2) specifying the basis for the guidelines, specifically that, “The information and guidelines contained in each report required under paragraph (1) shall be based on the preponderance of the scientific and medical knowledge *which is current at the time the report is prepared*. (Emphasis added.) The DGAC is statutorily required to make recommendations and they must do so with the best available science at the time.

It has been said that the unit of measurement for scientific progress is scientific error. Every new discovery proves old conclusions wrong, and every incorrect conclusion of the past marks new knowledge that has taken its place. The Committee’s willingness to update positions based on new evidence is laudable. And, to the credit of the preceding DGACs, a review of the entirety of DGAC recommendations over time shows a remarkable consistency in most recommendations. In short, Americans rightfully have confidence in the reliability of the DGAC’s process and resulting recommendations.

### *C. Strength and Value of Surveillance Data*

The Academy supports the use of dietary surveillance data such as the National Health and Nutrition Examination Survey (NHANES) to contribute to the body of evidence used in forming DGAC conclusions. Observational data provides a unique perspective on the daily lives of thousands of Americans that would simply not be available in a timely or cost-effective manner from traditional clinical trials. We note that many of the same methods applied to dietary surveillance today were applied in the past to successfully identify smoking as a cause of lung cancer and a significant public health hazard.<sup>6</sup> The success of public health initiatives, informed by observational research, in reducing smoking strongly supports the rationale for inclusion of similar techniques in developing future dietary guidelines.

Although there are limitations to observational data, many of the specific criticisms leveled against NHANES—particularly that underreporting in dietary assessments undermines the validity of the data—have been muted when the criticisms are analyzed in detail. Criticisms of NHANES have been found to be exaggerated, based on flawed methodologies,

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<sup>5</sup> Scientific Report of the 2015 Dietary Guidelines Advisory Committee (DGAC Report). Part D. Chapter 1, Page 17. Dietary Guidelines website. Available at <http://www.health.gov/dietaryguidelines/2015-scientific-report/PDFs/Scientific-Report-of-the-2015-Dietary-Guidelines-Advisory-Committee.pdf> Released February 23, 2015. Accessed May 8, 2015.

<sup>6</sup> Proctor, R. N. (2012). The history of the discovery of the cigarette–lung cancer link: evidentiary traditions, corporate denial, global toll. *Tobacco control*, 21(2), 87-91.

and awash in conflicts of interest.<sup>7</sup> Underreporting is also unlikely to interfere with the use of findings from NHANES data to support the DGAC conclusions. In fact, underreporting would most likely serve the bias findings towards the null hypothesis and smaller effect sizes, thereby causing estimates and conclusions to be more conservative.<sup>8</sup>

## II. Dietary Patterns, Foods and Nutrients, and Health Outcomes

The Academy supports the DGAC's food-based recommendations and its focus on meal patterns and we encourage HHS and USDA to adopt these recommendations for healthy eating in the 2015 Dietary Guidelines for Americans. Dietary patterns are a relatively simple way to deliver consumer-friendly guidance by utilizing existing knowledge of health and nutrition. As the DGAC's recommendations are translated into real dietary guidance, individuals must be able to understand the types and amounts of foods they should consume as the basis for lifelong health. To that end, the Academy encourages HHS and USDA to consider providing guidance to Americans consuming common (but not necessarily recommended) diets that are not part of the selected dietary patterns, such as a lower carbohydrate diet, to assist in making healthier choices within these popular diet regimen.

### A. Red Meat and Protein Consumption

The Academy encourages HHS and USDA to clarify an aspect of the Scientific Report's recommendations related to dietary patterns that has received significant attention, specifically the DGAC recommendation that "the U.S. population should be encouraged and guided to consume dietary patterns that are rich in vegetables, fruits, whole grains, seafood, legumes, and nuts; moderate in low- and non-fat dairy products and alcohol (among adults); lower in red and processed meat; and low in sugar-sweetened foods and beverages and refined grains."<sup>9</sup> The Academy did not interpret that recommendation as impugning the healthfulness of red meat or its place in recommended meal patterns as a protein and a source of important shortfall nutrients, such as iron. When simply looking at the broad category of protein, intakes "(as grams/day) are adequate across the population and protein is not a shortfall nutrient."<sup>10</sup> However, when looking specifically at various sources of proteins, there is a difference in adequate intake, because animal proteins comprise a larger-than-recommended share of the overall nutrient consumed.

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<sup>7</sup> Archer, E., Hand, G. A., & Blair, S. N. (2013). Validity of US nutritional surveillance: National Health and Nutrition Examination Survey caloric energy intake data, 1971–2010. *PloS one*, 8(10), e76632. *Compare to Healthy People 2020. PA-2. Increase the proportion of adults who meet current federal physical activity guidelines for aerobic physical activity and for muscle-strengthening activity.* Washington, DC: U.S. Department of Health and Human Services. Office of Disease Prevention and Health Promotion; [cited 2014]. Available from: <https://www.healthypeople.gov/2020/topics-objectives/topic/physical-activity/objectives>.

<sup>8</sup> Jepsen P, Johnsen SP, Gillman MW, Sørensen HT. Interpretation of observational studies. *Heart*. 2004;90(8):956-960. doi:10.1136/hrt.2003.017269.

<sup>9</sup> DGAC Report, Part D. Chapter 2, Page 45.

<sup>10</sup> DGAC Report, Part D. Chapter 1, Page 33.

Approximately 80 percent of Americans meet the intake recommendations for animal proteins (meat, poultry and eggs), but only 60 percent meet the recommendations for the larger definition of “meat, poultry, fish, seafood, eggs, soy, nuts, and seeds.”<sup>11</sup> Indeed, a comparison of NHANES data for the consumption of red meat alone to the USDA’s Food Patterns recommendations suggest that American adults on average eat almost as much red meat per week (20 oz) as the USDA recommends for meat, poultry, and eggs combined (26 oz).<sup>12,13</sup> Put differently, the DGAC recommendation is consistent with existing USDA Food Patterns suggesting (a) that red meat consumption exceeds recommendations for most subgroups and (b) that a greater share of recommended protein consumption should be met by seafood, legumes, and nuts.

*B. Limitations in Conclusions about Health of Food Groups and Dietary Patterns*

The Academy supports the use of dietary pattern analysis as a framework for generating public health recommendations and the use of NEL systematic review on the topic, which employed state-of-the-art evidence synthesis techniques. It is important, however, to recognize and articulate the limitations of this approach and accordingly, to present the findings in a manner consistent with their most accurate interpretation.

We note that for all topics in this section, the evidence synthesis provided by the NEL cannot support any inferences about the contributions that individual food groups make to the overall effect observed for a dietary pattern. In the reviews, the majority of the available evidence was provided by studies using scoring systems to assess adherence to predefined diet patterns, and the NEL identified diet patterns that associated outcomes of interest. The NEL discussed the similarities and differences of the dietary patterns with regard to food groups, but no analytical approach was used to compare the contributions of these food group components to either overall scores or to the predictive performance of individual food groups.<sup>14</sup> Without these analyses, it cannot be said whether any individual food group was correctly identified as positively or negatively contributing to the pattern score and disease risk. As a result, the possibility remains that individual food groups have a diminished or even opposite effect of what is expected, an effect that could be masked by other components of the diet pattern assessment techniques that are strongly performing.

The NEL reviews also considered direct evidence for specific food groups, but, across all reviews, the evidence base for these analyses was smaller and the results were inconsistent. For example, in the cardiovascular disease review, dairy “was reported both

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<sup>11</sup> DGAC Report, Part D. Chapter 1, Page 33.

<sup>12</sup> Daniel CR, Cross AJ, Koebnick C, Sinha R. Trends in meat consumption in the USA. *Public Health Nutr.* 2011;14(4):575-83.

<sup>13</sup> USDA Food Patterns. CNPP website. Available at [http://www.cnpp.usda.gov/sites/default/files/usda\\_food\\_patterns/USDAFoodPatternsSummaryTable.pdf](http://www.cnpp.usda.gov/sites/default/files/usda_food_patterns/USDAFoodPatternsSummaryTable.pdf) Published September 2011. Accessed May 8, 2015.

<sup>14</sup> Nutrition Evidence Library. "A Series of Systematic Reviews on the Relationship Between Dietary Patterns and Health Outcomes." United States Department of Agriculture. 2014. Accessed April 28, 2015. Nutrition Evidence Library. "2015 DGAC Dietary Patterns NEL Systematic Reviews" United States Department of Agriculture. 2015. Accessed April 28, 2015.

negatively and positively in different studies. One study reported an unfavorable association between total dairy and CHD risk;<sup>15</sup> however, two studies reported a favorable association between total dairy and HTN.”<sup>16</sup> It is also noteworthy that not a single study included in the review for cardiovascular disease is reported to have identified saturated fat as having an unfavorable association with cardiovascular disease, which is discussed in detail in Section V(B) below.<sup>17</sup>

In the conclusion statements and in Table D2.3, the individual food group components are specified next to a DGAC evidence strength grade, potentially giving the false impression that the evidence supports that specific listing of food groups. The Academy recommends that HHS and USDA revise the descriptions to eliminate any misconception and to appropriately emphasize only those conclusions. For example, the “Description of the Dietary Pattern Associated with Beneficial Health Outcomes” heading in Table D2.3 could be modified to read, “Dietary Patterns Based on the Dietary Guidelines for Americans, the Mediterranean Diet, and the DASH Diet,” and the cell immediately below it associated with “Cardiovascular disease” could be modified to read, “The common elements of these patterns are higher consumption of vegetables, fruits, whole grains, low-fat dairy, and seafood, and lower consumption of red and processed meat, and lower intakes of refined grains, and sugar-sweetened foods and beverages relative to less healthy patterns; regular consumption of nuts and legumes; moderate consumption of alcohol; lower in saturated fat, cholesterol, and sodium and richer in fiber, potassium, and unsaturated fats.” To further clarify the distinction, we suggest addition of a footnote noting that, “The available evidence was insufficient to support comparisons of the relative impact of individual food groups within dietary patterns.”

### *C. Suggested Reconsideration of Conclusion Statement*

The Academy respectfully encourages HHS and USDA to reconsider the appropriateness of including the following meal pattern conclusion statement in the Scientific Report:

long-term health implications with certain patterns may be detrimental to cardiometabolic health. These associations have been discussed in the dietary patterns and cardiovascular health section as well as the saturated fat and cardiovascular health section.<sup>18</sup>

This conclusion statement appears to lack any substantiation to equate these primarily macronutrient balance-based dietary patterns with either the food groups that are

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<sup>15</sup> Buckland G, Gonzalez CA, Agudo A, Vilardell M, Berenguer A, et al. Adherence to the Mediterranean Diet and risk of coronary heart disease in the Spanish EPIC Cohort Study. *Am J Epidemiol.* 2009; 170(12): 1,518-1,529.

<sup>16</sup> [Folsom, 2007 [DASH] or elevated BP (Steffen, 2005 [Food Index])

<sup>17</sup> Nutrition Evidence Library. "A Series of Systematic Reviews on the Relationship Between Dietary Patterns and Health Outcomes." United States Department of Agriculture. 2014. Accessed April 28, 2015

<sup>18</sup> DGAC Report, Part D. Chapter 2, Page 17.

discussed in the dietary patterns section of the Scientific Report or with the dietary fat compositions discussed in the saturated fat section of the Scientific Report.

### **III. Individual Diet and Physical Activity Behavior Change**

It is critical to ensure that individuals making diet and behavior changes in accordance with the Dietary Guidelines have access to the resources and support necessary to succeed. HHS and USDA must have sufficient resources to commit to improving a number of initiatives, including: comprehensibility of nutrition labels; providing nutrition education that enables consumers to make healthy food choices and to make them on a budget; and commit to long-term strategies for making environmental changes that encourage regular physical activity. We are in strong agreement that, in addition to adequate relief, participants in nutrition assistance programs should receive “tailored counseling to choose foods with their limited budgets that meet the Dietary Guidelines for Americans.”<sup>19</sup> Registered dietitian nutritionists, as America’s food and nutrition experts, are the ideal professionals with demonstrated success in providing this much needed and underfunded service.

Consumers can become confused by seemingly counterintuitive and conflicting nutrition messages, including some from the federal government. The Academy recognizes that, for example, the FDA is statutorily required to define “serving size” in a descriptive rather than aspirational manner and that some federal nutrition assistance programs allow flexibility in purchasing that does not require conformance to the Dietary Guidelines.

Notwithstanding statutory and regulatory complexities, the Academy agrees with the DGAC that, “food and calorie label education should be designed to be understood by audiences with low health literacy, some of which may have additional English language fluency limitations.”<sup>20</sup>

Inexplicably constraining rules for federal nutrition guidance has been particularly frustrating for the millions of Americans with kidney disease (and their families) who must limit their intake of phosphorous lest they risk suffering debilitating and even fatal effects from an associated persistent elevation of certain hormones. Unfortunately, it is difficult to ascertain the amount of phosphorous in a product because the increasingly prolific nutrient is not mandated on the Nutrition Facts label. Thus, for millions of Americans ordered by their physicians to limit phosphorous, their only assured method is to look at the ingredients list and avoid *all* products with any amount of phosphorous, which is a flawed solution when one study shows 45% of the best-selling grocery items contain phosphorus additives.<sup>21</sup>

The Academy agrees with the DGAC that the mere inclusion of evidence-based food and nutrition recommendations in the Dietary Guidelines is unlikely to achieve the intended

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<sup>19</sup> DGAC Report, Part D. Chapter 3, Page 18.

<sup>20</sup> DGAC Report, Part D. Chapter 3, Page 25.

<sup>21</sup> Leon JB, et al. The prevalence of phosphorus-containing food additives in top-selling foods in grocery stores, *J Ren Nutr*, 2013 Jul; 23(4): 265–270.

goals. As the DGAC recognizes, “[f]or this approach to work, it will be essential that the food environments in communities available to the U.S. population, particularly to low-income individuals, facilitate access to healthy and affordable food choices that respect their cultural preferences.”<sup>22</sup>

The DGAC’s counterintuitive findings that the long term effects of food insecurity may lead to adults with obesity are of profound importance for public policy and public health. The findings of this important review are consistent with evidence linking lower socioeconomic status with obesity due to the inverse relationship between energy density and energy cost,<sup>23</sup> and in line with the importance of addressing the unacceptable levels of food insecurity as addressed in the Academy’s related position paper.<sup>24</sup>

Accordingly, the Academy supports the DGAC recommendation that Americans reduce the frequency of eating out at fast food restaurants to achieve optimal health. While the existing body of evidence specifically focused on the topic is imperfect and the demographic diversity is suboptimal, the evidence examined in the dietary patterns chapter of this report and additional research into specific foods associated with health outcomes are consistent with the recommendation to reduce intake of these types of foods by reducing the frequency of eating out at fast food restaurants.

#### **IV. Food Environment and Settings**

The Academy supports the DGAC’s recommendations for food environment and settings and applauds the DGAC for recognizing the importance of this issue, its impact on the nutritional status of Americans, and making associated evidence-based recommendations. Recognizing the effort required to assess them, the Academy hopes that future DGACs will review additional venues in which many dietary choices are made. The Academy believes that ideal Health Promotion and Disease Prevention approaches should be multifactorial and encompass both individual and environmental determinants of health and disease because individuals’ behaviors are understandably influenced by the physical and social environment. Environmental characteristics, for example, such as less walkable or low socioeconomic status (SES) neighborhoods, have been linked to less physical activity or higher prevalence of overweight or obesity.<sup>25</sup>

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<sup>22</sup> DGAC Report, Part A. Executive Summary, Page 5.

<sup>23</sup> Drewnowski A, Specter S. Poverty and obesity: the role of energy density and energy costs. *The American Journal Of Clinical Nutrition* [serial online]. January 2004;79(1):6-16. Available from: MEDLINE Complete, Ipswich, MA. Accessed April 28, 2015.

<sup>24</sup> Holben D. Position of the American Dietetic Association: food insecurity in the United States. *Journal Of The American Dietetic Association* [serial online]. September 2010;110(9):1368-1377. Available from: MEDLINE Complete, Ipswich, MA. Accessed April 28, 2015.

<sup>25</sup> Slawson D, Fitzgerald N, Morgan K. Position of the Academy of Nutrition and Dietetics: The Role of Nutrition in Health Promotion and Chronic Disease Prevention. *Journal Of The Academy Of Nutrition & Dietetics* [serial online]. July 2013;113(7):972-979. Available from: SPORTDiscus with Full Text, Ipswich, MA. Accessed April 29, 2015.



Access to a variety of affordable and healthy foods can be limited in rural or certain urban settings (e.g., food deserts), which in turn are likely to influence food intake behaviors. Neighborhoods with low SES are frequently characterized by lower access to supermarkets and higher density of fast-food restaurants. Access to supermarkets has been positively related to diet quality; higher fast-food consumption or living in areas with higher concentration of fast food restaurants has been linked to higher type 2 diabetes incidence, body weight, waist circumference, and plasma triglycerides, and lower high-density lipoprotein cholesterol concentrations among adults.<sup>26</sup>

However, the association is not definitive, suggesting potential value for an integrated approach to health promotion and disease prevention that includes behavioral and educational components. Limited evidence suggests that behavioral interventions can improve self-efficacy<sup>27</sup> and that educational interventions designed and implemented by Academy members can improve purchasing behavior.<sup>28</sup> Many retailers, recognizing RDNs effectiveness and the value in helping their customers make healthy purchases, are employing these experts on their retail management teams. Improving access to healthful foods is unquestionably important in the food environment. However, adding an integrated intervention where nutrition and dietetics practitioners provide community members with skill sets to best take advantage of the improved access can multiply the initial investment and facilitate the long-term success and viability of the programs. Future DGACs should consider reviewing the effectiveness of various interventions and recommending those with potential to be scaled up or kept afloat.

The Academy encourages HHS and USDA to give additional consideration to the extent of virtual influences within the environment (i.e., media) likely to impact food intake behaviors and health outcomes, including their influence on health and diet. Exposure to energy-dense, nutrient-poor food advertisements has been shown to have a negative effect on food requests made by children.<sup>29</sup> A recent study indicated the elimination of advertising of unhealthy foods and beverages to children on television alone could reduce childhood obesity by 18 percent, or approximately 2.8 million children.<sup>30</sup> High levels of screen time can also contribute to overweight or obesity by replacing more physically demanding activities. In 2009, American children spent an average of 7.4 hours per day watching media (television, computers, video games, movies, etc.), a figure even higher for minority children.<sup>31</sup> The explosion of social media has led to excessive use by some to the

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<sup>26</sup> *Id.*

<sup>27</sup> McCloskey J, Flenniken D. Overcoming cultural barriers to diabetes control: a qualitative study of southwestern New Mexico Hispanics. *Journal Of Cultural Diversity* [serial online]. September 2010;17(3):110-115. Available from: CINAHL Complete, Ipswich, MA. Accessed April 29, 2015.

<sup>28</sup> Condrasky M, Frost S, Lee A, Simmons S, Hrabski T. What's cooking? A culinary nutrition research program with dietetic interns. *Topics In Clinical Nutrition* [serial online]. July 2010;25(3):280-288. Available from: CINAHL Complete, Ipswich, MA. Accessed April 29, 2015.

<sup>29</sup> Slawson et al.

<sup>30</sup> Chou S, Rashad I, Grossman M. "Fast-food Restaurant Advertising on Television and Its Influence on Childhood Obesity." *Journal of Law and Economics* 2008, vol. 51, pp. 599-617.

<sup>31</sup> Slawson et al.

point of becoming “problematic.”<sup>32</sup> Although there have been some variations by age and sex, numerous studies have linked sedentary or screen time and number of media resources in the household to overweight or obesity and detrimental impacts on physical fitness among children and youth.

We support DGAC’s use of the social ecological model in making its recommendations. A social ecological framework can be used effectively to address the factors related to health and disease at the individual or intrapersonal level (e.g., individuals’ knowledge, beliefs, self-efficacy, or skills), interpersonal (family or peer level influences), and community or institution levels (e.g., school food environment, worksite policies, vending machines, food outlets within neighborhoods). In addition, social ecological models include public policy and society-level factors (e.g., DGA, food labeling, pricing, agricultural, and federal assistance regulations).

The Academy is familiar the growing body of evidence around the importance of sustainable practices in food and water systems. Registered dietitian nutritionists recognize the opportunity and responsibility, as food and nutrition professionals, to integrate sustainable, resilient, and healthy (SRH) food and water systems into our respective practice areas as a means to secure, preserve, and strengthen these systems now and for the future. Therefore, the Academy continues to develop and implement standards of practice for SRH Food and Water Systems to ensure that we can better serve tomorrow’s practitioners and their customers, clients, and community.<sup>33</sup>

## **V. Cross-Cutting Topics of Public Health Importance**

### *A. Sodium*

There is a distinct and growing lack of scientific consensus on making a single sodium consumption recommendation for all Americans, owing to a growing body of research suggesting that the low sodium intake levels recommended by the DGAC are actually associated with increased mortality for healthy individuals. The Academy encourages HHS and USDA to carefully draft the 2015 Dietary Guidelines in light of these findings, while recognizing the ongoing need for a subset of the population to hear and abide by the existing low sodium recommendation. The Academy is also concerned that the Scientific Report’s section on sodium intake appears to use the conclusions of several studies that specified they were only for those “who would benefit from blood pressure lowering” as a basis for making a general recommendation that all American adults consume less than 2,300 mg/day of sodium. There are instances in which it is reasonable to make recommendations that are expected to benefit only a subset of a population if the benefits far outweigh the risks, but as noted above, dietary sodium restriction is not one of them.

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<sup>32</sup> Meena PS, Mittal PK, Solanki RK. Problematic use of social networking sites among urban school going teenagers. *Industrial Psychiatry Journal*. 2012;21(2):94-97. doi:10.4103/0972-6748.119589.

<sup>33</sup> Tagtow A, Robien K, Bergquist E, et al. Academy of Nutrition and Dietetics: Standards of professional performance for Registered Dietitian Nutritionists (Competent, Proficient, and Expert) in Sustainable, Resilient, and Healthy Food and Water Systems. *J Acad Nutr Diet*. 2014;114(3):475-488.e24.

These studies and reviews have observed “U” and “J” shaped curves for the relationship between sodium intake and mortality, and they each have reported optimal ranges for sodium intake significantly greater than the DGAC’s recommended maximum intake: 2,645 - 4,945,<sup>34</sup> 3,000 – 5,000,<sup>35</sup> and 2,900 - 3,400<sup>36</sup> mg/day.

Past iterations of the Dietary Guidelines have consistently identified an ongoing research gap in all previous editions related to the difficulty in identifying those at risk for hypertension. For example, the 1990 Dietary Guidelines stated, “there is no way to determine who might develop high blood pressure and who will benefit from restricting dietary salt and sodium.”<sup>37</sup> The DGAC’s recognition that those who might benefit cannot be identified—when considered in the light of growing evidence that sodium restrictions at the levels recommended in this Scientific Report have the potential to cause harm—should give HHS and USDA pause before adopting this particular recommendation.

### *B. Saturated Fat*

In the spirit of the 2015 DGAC’s commendable revision of previous DGAC recommendations to limit dietary cholesterol, the Academy suggests that HHS and USDA support a similar revision deemphasizing saturated fat as a nutrient of concern. While the body of research linking saturated fat intake to the modulation of LDL and other circulating lipoprotein concentrations is significant, this evidence is essentially irrelevant to the question of the relationship between diet and risk for cardiovascular disease. The 2010 Institute of Medicine (IOM) report on the use of biomarkers as surrogates for disease outcomes examined LDL and HDL as case studies and concluded unequivocally that they were not suitable for use as surrogates for the impact of diet on heart disease.<sup>38</sup> The IOM concluded that, “lowering LDL-C does not always correlate with improved patient outcomes,”<sup>39</sup> and described the evidence from the ILLUMINATE trial (in which a drug therapy that successfully evidenced decreased LDL-C levels and increased HDL-C in fact caused an increase in cardiovascular events and death).<sup>40</sup> Due to this and other studies’

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<sup>34</sup> Graudal N, Jürgens G, Baslund B, Alderman M. Compared with usual sodium intake, low- and excessive-sodium diets are associated with increased mortality: a meta-analysis. *American Journal Of Hypertension* [serial online]. September 2014;27(9):1129-1137. Available from: MEDLINE Complete, Ipswich, MA. Accessed May 4, 2015.

<sup>35</sup> O’Donnell M, Mentz A, Yusuf S, et al. Urinary sodium and potassium excretion, mortality, and cardiovascular events. *New England Journal Of Medicine* [serial online]. August 14, 2014;371(7):612-623. Available from: CINAHL Complete, Ipswich, MA. Accessed May 4, 2015.

<sup>36</sup> Academy of Nutrition and Dietetics Evidence Analysis Library (EAL). “Harms at Extremes of Sodium Intake: General Population.” 2014. Academy of Nutrition and Dietetics. Accessed 5/4/2015. <http://www.andeal.org/topic.cfm?menu=5293&cat=5502>

<sup>37</sup> Myers et al (2013).

<sup>38</sup> IOM (Institute of Medicine). 2010. *Evaluation of biomarkers and surrogate endpoints in chronic disease*. Washington, DC: The National Academies Press.

<sup>39</sup> *Id.* at 165

<sup>40</sup> Barter P, Caulfield M, Brewer B, et al. Effects of torcetrapib in patients at high risk for coronary events. *The New England Journal Of Medicine* [serial online]. November 22, 2007;357(21):2109-2122. Available from: MEDLINE Complete, Ipswich, MA. Accessed April 30, 2015.

demonstration of a disconnect between lipoprotein modulation therapies and the expected improvements in cardiovascular disease outcomes, the IOM concluded that “data supports use of LDL as a surrogate endpoint for some cardiovascular outcomes for statin drug interventions, but not for all cardiovascular outcomes or other cardiovascular interventions, foods, or supplements” and that “current data does not support use [of HDL] as a surrogate endpoint.”<sup>41</sup>

The Academy’s position paper on dietary fats similarly concluded that, “despite documented influence of saturated fat on surrogate disease markers, the effect of saturated fat intake on disease end points is not clear.”<sup>42</sup> Even the current DGAC Scientific Report notes the inconsistency of the relationship between diet-modulated lipoproteins and cardiovascular outcomes: “the majority of studies that assessed coronary heart disease (CHD) incidence or mortality also reported a favorable association between adherence to a healthy dietary pattern and CHD risk.”<sup>43</sup> The implication then, is that some number of studies did not observe the expected correlation between CHD risk factors and CHD incidence in the context of dietary patterns. The evidence is clear that changes in LDL and HDL induced by diet cannot be assumed to correspond to the expected changes in actual cardiovascular disease risk, and thus this body of evidence that uses lipoproteins as surrogate endpoints for cardiovascular disease must be excluded from considerations of the impact of diet on cardiovascular health.

We commend the DGAC on a thorough and accurate review of the current best evidence with regard to the body of evidence relating dietary fats to cardiovascular disease outcomes,. However, we are concerned that the evidence does not lead to the conclusion that saturated fats should be replaced with polyunsaturated fats for the greatest health benefit.

The Scientific Report discusses the prominent meta-analyses that have consistently found no relationship between saturated fat intake and risk for cardiovascular disease, but the interpretation of these findings is obfuscated in the report by the inclusion of assumptions about unspecified replacement nutrients (in lines 542-546). There is no need for these assumptions to fully describe the relationship between macronutrient groups and cardiovascular disease risk using the evidence present in this review. If one grants that each macronutrient group exhibits some real effect on the risk for cardiovascular disease and acknowledge the limitation that these effects can only be observed in the context of substitution between the nutrients, then the findings among the studies reviewed can be expressed with the following inequalities:

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<sup>41</sup> IOM 2010. Evaluation of biomarkers and surrogate endpoints in chronic disease. Washington, DC: The National Academies Press at 133.

<sup>42</sup> Vannice G, Rasmussen H. Position of the Academy of Nutrition and Dietetics: Dietary Fatty Acids for Healthy Adults. *Journal Of The Academy Of Nutrition & Dietetics* [serial online]. January 2014;114(1):136-153. Available from: SPORTDiscus with Full Text, Ipswich, MA. Accessed May 1, 2015.

<sup>43</sup> DGAC Report, Part D. Chapter 2, Page 13.

$$F_{Poly} - F_{Sat} < 0 \quad (eq\ 1)$$

$$C - F_{Sat} > 0 \quad (eq\ 2)$$

In equation 1, a reduction in saturated fat ( $F_{Sat}$ ) and increase in polyunsaturated fat ( $F_{Poly}$ ) results in a reduction in the risk of cardiovascular disease;<sup>44</sup> and in equation 2, a reduction of saturated fat with an increase in carbohydrate intake ( $C$ ) results in an increase in risk.<sup>45</sup> Equation 2 can be rearranged to express the relative impacts of saturated fat and carbohydrate on cardiovascular risk:

$$C > F_{Sat} \quad (eq\ 3)$$

Equation 3 demonstrates that carbohydrate intake conveys a greater amount of cardiovascular disease risk than does saturated fat. Combined with the evidence from multiple studies that have estimated the impact of saturated fat to be near zero,<sup>46</sup> it is likely that the impact of carbohydrate on cardiovascular disease risk is positive. Furthermore, the impact of polyunsaturated fat can be added to the negative of equation 3 to compare the relative impact on risk for cardiovascular disease for substituting polyunsaturated fat for either saturated fat or carbohydrate:

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<sup>44</sup> Hooper L, Summerbell CD, Thompson R, Sills D, Roberts FG, Moore HJ, et al. Reduced or modified dietary fat for preventing cardiovascular disease. *Cochrane Database Syst Rev.* 2012;5:CD002137. PMID: 22592684. <http://www.ncbi.nlm.nih.gov/pubmed/22592684>. Mozaffarian D, Micha R, Wallace S. Effects on coronary heart disease of increasing polyunsaturated fat in place of saturated fat: a systematic review and meta-analysis of randomized controlled trials. *PLoS Med.* 2010;7(3):e1000252. PMID: 20351774. <http://www.ncbi.nlm.nih.gov/pubmed/20351774>. Farvid MS, Ding M, Pan A, Sun Q, Chiuve SE, Steffen LM, et al. Dietary Linoleic Acid and Risk of Coronary Heart Disease: A Systematic Review and Meta-Analysis of Prospective Cohort Studies. *Circulation.* 2014. PMID: 25161045. Jakobsen MU, O'Reilly EJ, Heitmann BL, Pereira MA, Bälter K, Fraser GE, et al. Major types of dietary fat and risk of coronary heart disease: a pooled analysis of 11 cohort studies. *Am J Clin Nutr.* 2009;89(5):1425-32. PMID: 19211817.

<sup>45</sup> Jakobsen MU, O'Reilly EJ, Heitmann BL, Pereira MA, Bälter K, Fraser GE, et al. Major types of dietary fat and risk of coronary heart disease: a pooled analysis of 11 cohort studies. *Am J Clin Nutr.* 2009;89(5):1425-32. PMID: 19211817.

<sup>46</sup> Skeaff CM, Miller J. Dietary fat and coronary heart disease: summary of evidence from prospective cohort and randomised controlled trials. *Ann Nutr Metab.* 2009;55(1-3):173-201. PMID: 19752542. <http://www.ncbi.nlm.nih.gov/pubmed/19752542>. Siri-Tarino P, Sun Q, Hu F, Krauss R. Meta-analysis of prospective cohort studies evaluating the association of saturated fat with cardiovascular disease. *The American Journal Of Clinical Nutrition* [serial online]. March 2010;91(3):535-546. Available from: MEDLINE Complete, Ipswich, MA. Accessed May 1, 2015. Chowdhury R, Warnakula S, Kunutsor S, Crowe 1277 F, Ward HA, Johnson L, et al. Association of dietary, circulating, and supplement fatty acids with coronary risk: a systematic review and meta-analysis. *Ann Intern Med.* 2014;160(6):398-406. PMID: 24723079. <http://www.ncbi.nlm.nih.gov/pubmed/24723079>. Mente A, de Koning L, Shannon H, Anand S. A systematic review of the evidence supporting a causal link between dietary factors and coronary heart disease. *Archives Of Internal Medicine* [serial online]. April 13, 2009;169(7):659-669. Available from: MEDLINE Complete, Ipswich, MA. Accessed May 1, 2015.

$$\begin{array}{r}
 -C < -F_{Sat} \\
 +F_{Poly} \quad + F_{Poly} \\
 \hline
 F_{Poly} - C < F_{Poly} - F_{Sat} \quad (eq\ 4)
 \end{array}$$

Equation 4 demonstrates that the substitution of polyunsaturated fat for carbohydrate will result in a lesser net risk for cardiovascular disease than if polyunsaturated fat were substituted for saturated fat. This is true because carbohydrate contributes a greater amount to the risk for cardiovascular disease than saturated fat, so the replacement of carbohydrate will necessarily result in a greater improvement in risk. **Therefore, it appears that the evidence summarized by the DGAC suggests that the most effective recommendation for the reduction in cardiovascular disease would be a reduction in carbohydrate intake with replacement by polyunsaturated fat.** This simplified recommendation would also aid in creating a consistent overall message of the DGA, allowing for consumer messaging to focus on benefits of decreasing added sugars in the diet to reduce cardiovascular disease, obesity, and type 2 diabetes, consistent with the conclusion statements in the added sugars section of the Scientific Report.

### *C. Added Sugars*

The Academy strongly supports the definition of added sugars used by the DGAC, consistent with the definition used by the Food and Drug Administration in its 2014 proposed food labeling rule.<sup>47</sup> This definition allows for the effective identification of the foods to be limited while avoiding creating confusion with nutrient dense foods containing natural sugars, such as whole fruits and dairy products.

The Academy appreciates that the DGAC completed a thorough review of the evidence for the relationship between added sugars and health and has drawn sound conclusions from the evidence. Of all the crosscutting topics reviewed, the evidence is strongest that a reduction in the intake of added sugars will improve the health of the American public. The identification and recognition of the specific health risks posed by added sugars represents an important step forward for public health. We recommend that these risks and recommendations be featured prominently in the 2015 Dietary Guidelines for Americans.

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<sup>47</sup> “Food Labeling: Revision of the Nutrition and Supplement Facts Labels, Proposed Rule,” 79 Federal Register 41 (March 3, 2014).

## VI. Conclusion

The Academy appreciates the opportunity to comment on the Scientific Report and serve as a resource to HHS and USDA as you finalize the 2015 Dietary Guidelines for Americans and develop resources to implement and encourage them nationwide. We are happy to discuss these recommendations in greater detail in the near future. Please contact either Alison Steiber at 202-775-8277 ext. 4860 or by email at [asteiber@eatright.org](mailto:asteiber@eatright.org) or Pepin Tuma at 202-775-8277 ext. 6001 or by email at [ptuma@eatright.org](mailto:ptuma@eatright.org) with any questions or requests for additional information.

Sincerely,



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