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Perspective: Impact of the National Academy of Sciences, Engineering, and Medicine Report on the Process for the 2020 Dietary Guidelines Advisory Committee

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ABSTRACT

The National Academy of Sciences, Engineering, and Medicine (NASEM) recommended steps to redesign the process of developing the Dietary Guidelines for Americans (DGA) are based on 5 guiding principles (enhance transparency; promote diversity of expertise and experience; support a deliberative process; manage biases and conflicts of interest; and adopt state-of-the-art processes and methods). Using these principles and recommendations, the USDA and HHS updated the process for developing the 2020–2025 Dietary Guidelines, including the process for appointing members and managing the work of the 2020 Dietary Guidelines Advisory Committee. Modifications included having public comment on the topics and questions to be addressed by the Federal Advisory Committee, reviewing professional and financial activities on potential appointees to the committee prior to their appointment, redesigning the website to provide status updates on the work of the committee as analytical frameworks and draft conclusions were developed, strengthening the approaches for conducting systematic reviews, and adding a public meeting for discussion of the final report before its submission to the Secretaries of the USDA and HHS. Because the DGA is reviewed and updated every 5 y, it is possible to learn from each cycle what works well and where improvements in the process can be implemented. The current article illustrates, from the perspective of the advisory committee, the impact of the NASEM report on the development of the scientific report by examining changes in the process consistent with the 5 principles. *Adv Nutr* 2021;12:1051–1057.

Statement of Significance: Recommendations from NASEM to redesign the process to develop the Dietary Guidelines were implemented for the 2020-2025 Dietary Guidelines process. The publication demonstrates how these recommendations influence the process of developing the scientific report by the 2020 Scientific Advisory Committee.

Keywords: Dietary Guidelines for Americans, Dietary Guidelines Advisory Committee, dietary guidelines process, NASEM, nutrition policy

Introduction

After the 2015–2020 Dietary Guidelines for Americans (DGA) (1) was released, Congress authorized funds to conduct a study by the National Academy of Sciences, Engineering, and Medicine (NASEM) to examine the process for developing the DGA and make recommendations related to the process for selecting members of the advisory committee and for review of scientific evidence related to

preventing chronic disease, ensuring nutrient sufficiency, and accommodating a range of individual factors (**Table 1**) (2, 3). To develop recommendations, the NASEM committee identified 5 values or principles, listed below, to enhance the integrity of the DGA process so that the DGA recommendations would be seen as trustworthy:

- Enhance transparency.
- Promote diversity of expertise and experience.

TABLE 1 Statement of Task for the NASEM project (2, 3) on the process to develop the Dietary Guidelines for Americans¹

- (1) How the advisory committee selection process can be improved to provide more transparency, eliminate bias, and include committee members with a range of viewpoints.
- (2) How the Nutrition Evidence Library $(NEL)^2$ is compiled and utilized, including whether the NEL reviews and other systematic reviews and data analysis are conducted according to rigorous and objective scientific standards.
- (3) How systematic reviews are conducted on long-standing DGA recommendations, including whether scientific studies are included from scientists with a range of viewpoints.
- (4) How the DGA can better prevent chronic disease, ensure nutritional sufficiency for all Americans, and accommodate a range of individual factors, including age, gender, and metabolic health.

- Support a deliberative process (including being adaptive and flexible, continuous, and supportive of continuous learning).
- Manage biases and conflicts of interest.
- Adopt state-of-the-art processes and methods.

In developing the process to establish the 2020-2025 DGA, the USDA and US Department of Health and Human Services (HHS) reaffirmed these values (4). The NASEM recommendations are found in 2 reports (2, 3) and are summarized in the Online Supplemental Material. In this current article, our objective is to illustrate from the perspective of the 2020 Dietary Guidelines Advisory Committee (DGAC), the impact of the NASEM report on the development of the technical report from the DGAC (5). As a consequence, the article serves to highlight the changes to the process that were made in response to the NASEM recommendations, consistent with the 5 principles.

Changes in the process for development of the DGAC report

Enhance transparency.

Since 1985, the Secretaries of the USDA and HHS have appointed a Federal Advisory Committee to advise the departments on the 5-y update of the DGA. This committee typically has a 2-y charter and is disbanded once the scientific report is submitted to the Secretaries. Federal

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Perspective articles allow authors to take a position on a topic of current major importance or controversy in the field of nutrition. As such, these articles could include statements based on author opinions or point of view. Opinions expressed in Perspective articles are those of the author and are not attributable to the funder(s) or the sponsor(s) or the publisher, Editor, or Editorial Board of Advances in Nutrition. Individuals with different positions on the topic of a Perspective are invited to submit their comments in the form of a Perspectives article or in a

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Abbreviations used: DGA, Dietary Guidelines for Americans; DGAC, Dietary Guidelines Advisory Committee; FACA, Federal Advisory Committee Act; HHS, Department of Health and Human $Services; NASEM, National\ Academy\ of\ Sciences, Engineering, and\ Medicine;\ NESR,\ Nutrition$ Evidence Systematic Review.

advisory committees, which are governed by the Federal Advisory Committee Act (FACA) and are not standing advisory committees, are typically appointed to address specific questions within a specified time frame as used for the appointment of the 2020 DGAC (6). Prior to 2020, the charter for the DGAC referenced work conducted to develop research questions for the committee to consider in its advice to the Secretaries for updating the DGA. The work to develop the topics and research questions that the DGAC will address is time-intensive and can take ≤ 6 mo to develop and typically has reflected the topic priorities of the advisory committee. Following the NASEM recommendations, the USDA and HHS solicited input from federal agencies that rely on the DGA to identify topics and questions for the advisory committee to evaluate and then solicited public comment on these topics and questions prior to appointing the 2020 DGAC. In addition, the Agriculture Act of 2014 mandated the inclusion of guidelines for the birth-24 mo of age population, as well as women who are pregnant in the 2020-2025 DGA (7). Thus, the 2020-2025 DGA could focus on life stages and the overall lifespan through the addition of topics and questions for these population groups.

By identifying topics and questions for review prior to appointing the DGAC, both federal and public input regarding the priorities for the work of this Federal advisory committee was expanded. This step enabled the process for nominating candidates to serve on the committee to be primarily based on the expertise that was needed to address the research questions. Once appointed the committee could begin work immediately on addressing the questions.

The DGAC noted some limitations due to specifying the topics and questions in advance of convening the DGAC. For example, in some cases the committee was asked to review topics for which evidence was limited or did not exist. In addition, committee members needed to prioritize work among research questions or reformulate the research question to be more relevant to the topic area. Because the committee's task was to focus on the topics and questions developed through the public comment process, there was uncertainty about how to handle topics that were a part of the 2015–2020 DGA but not included in the topics that were reviewed by the 2020 DGAC, especially since these topics

¹NASEM, National Academy of Sciences, Engineering, and Medicine; DGA, Dietary Guidelines for Americans.

²The name of this unit has been changed to Nutrition Evidence Systematic Review (NESR).

remain relevant in the DGA recommendations (e.g. trans fat, sodium, dental caries).

Along with identifying important topics for consideration by future DGACs, the USDA and HHS can clarify the topics that will remain within the DGAs or will be updated based on current authoritative scientific reports. For example, the 2020 DGAC did not need to examine questions related to sodium because a recent consensus study from NASEM had updated sodium and potassium DRIs (8). Likewise, the recent declaration from the FDA that partially hydrogenated oils with trans fatty acids would no longer be considered Generally Recognized As Safe provided current evidence on the importance of limiting intake (9). Because of the limited appointment period for the DGAC, some prioritization was needed for the work to be conducted by the advisory committee to address the topics for which the government is seeking advice. Such prioritization of work has existed for each cycle of the DGA and the current approach allows transparency in how the work is prioritized by the advisory committee.

Committee members identified topics that will be important for consideration in future cycles of the DGA. This approach is consistent with the NASEM recommendation to develop a more continuous process over the 5-y cycles of the DGA development. The public comment period on the topics and questions to be addressed by the 2020 DGAC took place prior to nominating and appointing the members of the DGAC, who were then not directly involved in selecting these topics. However, through the Future Direction chapter in the committee's report, topics that will be important in future cycles of the DGA were identified based on the current committee's experience in examining evidence

In addition to using a public comment period on topics for review by the 2020 DGAC, several other steps were taken to enhance the transparency of the committee's work. The website used for the dietary guidelines (www.dietaryguidelines. gov) was redesigned to facilitate and enhance access to information by the public (10). The website listed the topics and questions that were being addressed by subcommittees between the public meetings and updated the status of the work. These status updates included the proposed protocols in the analytical frameworks developed to address the questions with systematic reviews and data analysis as well as draft conclusions after they had been peer reviewed. By providing the work in progress the public was able to comment on the committee's approach throughout the work of the committee and these comments were reviewed and taken into consideration. In addition to having materials available online, 5 public meetings were held to present proposed analytical frameworks and draft findings and conclusions from the evidence review. In 2 public meetings, time was available to hear oral comments from the public on the committee's work. For the first time, an additional public meeting was added to the schedule for the committee to present the draft advisory report, which included information on how the committee integrated the conclusions and summary from the work of each subcommittee into its advice to the Secretaries for the 2020–2025 DGA. Finally, once the DGAC report was submitted, a 30-d public comment period on the report was available.

During the work of the committee, over 62,000 public comments were submitted, which included over 4000 unique comments; in contrast, the 2015 DGAC received a total of 972 public comments. The comments that focused on the review and evaluation of scientific evidence were especially helpful to the DGAC. This record number of public comments, especially those directed toward how the committee conducted its evidence evaluation, illustrates that greater transparency in how the advisory committee functions allows for more input on the committee's approach to examining the evidence.

Promote diversity of expertise and experience.

Committee nominations were solicited after completion of the public comment period on the topics and questions for the 2020-2025 DGA and the proposed topics and questions were finalized. Consequently, the overall committee membership was developed to match the expertise needed for the topics and questions to be addressed. This balance in committee expertise was especially important because of the life stage topics to be evaluated by the advisory committee, including pregnancy, lactation, and birth-24 mo.

The public call for nominations was announced in the Federal Register and outlined the information needed for potential nominees (11). This information included educational background related to nutrition or a health-related field; \geq 10 y of professional experience in fields related to the topics to be evaluated plus leadership experience that included committee experience; and scientific expertise, as demonstrated through peer-reviewed publications or presentations related to the topics to be evaluated by the DGAC. In order to develop the needed balance, diversity, and range of viewpoints in the committee membership, the HHS and USDA specified certain elements regarding education, professional experience, and scientific expertise that were required in all nomination packets, for the first time. In addition, consistent with FACA, the departments strove to have balanced points of view and diversity with respect to sex, disabilities, race, ethnicities, geographic areas, and institutions. Committee membership was expanded from 11 members for the 2015 DGAC to 20 members for the 2020 DGAC; the expanded membership makes it difficult to compare with previous committees. The 2020 committee had 14 women and 6 men, the members came from 17 different institutions across all regions of the country. The committee included scientists with advance degrees in nutrition and medical doctors with expertise in a variety of topics on nutrition and food science; health outcomes including cancer, cardiovascular disease, obesity, bone health, neurocognitive health and age groups throughout the lifespan; trials and observational studies; and data analysis and systematic review methodology. The areas of expertise in relation to the topics and questions to be addressed are summarized in Appendices F-3 and F-4 of the scientific report (5).

Another approach the NASEM report recommended was to include more diversity of expertise and experience by utilizing technical expert panels prior to convening the advisory committee to evaluate evidence on emerging topics relevant to the DGA recommendations. The findings from the NASEM report illustrated that such an interim approach can build the foundation for the work of the advisory committee to incorporate a new topic into the DGA. For example, following release of the 2010 DGA, the departments initiated the Dietary Patterns Systematic Review project (12). The project informed the work of the 2015 DGAC review that emphasized the importance of dietary patterns, not simply food groups and nutrients, in examining diet and health relations. Following release of the 2015-2020 DGA and in anticipation of the mandate to include the birth-24 mo population and women who are pregnant in the next edition of the DGA, the departments initiated the Pregnancy and Birth to 24 Months Project, which resulted in a series of systematic reviews on diet and health published in *The* American Journal of Clinical Nutrition (13). The NASEM report used this project as an example of including more experts in the DGA development, especially when new or emerging topics are identified as important for the DGA to consider. The 2020 DGAC was able to build upon the publications from this project for its evidence review. It is likely that without the prior initiation of these technical expert panels, the work of the 2020 DGAC would have been limited in the scope of work that could be accomplished for these topic areas.

Support a deliberative process (including being adaptive and flexible, continuous, and supportive of continuous learning).

The principle to support a deliberative process reflects the NASEM report recommendations that the DGA should become a more continuous process that can adapt to new and emerging topics that are important for the health of the American population and indicates the ability to learn from what works well in each cycle of the DGA and what can work better. As a consequence, the long-term impact related to this principle will more appropriately be evaluated as the departments prepare for the 2025-2030 DGA. One step made by the 2020 DGAC was to make Future Directions a full chapter in the scientific report whereas this section has been an appendix in previous reports (5). The chapter is not directly included in the DGA but is useful for identifying issues and priorities in future cycles of the DGA. In this chapter, the committee made suggestions, not only for research needs based on our findings, but also on ways to improve the process of developing the DGA based on our experience. Having implemented changes based on the NASEM recommendations, the 2020 DGAC began the process of identifying what worked well and what might work better. In addition, the use of public comment periods on the various phases of the process (i.e. on the topics and

questions, nominations for committee members, on the work of the committee as it progressed, and on the DGAC report) provides input that creates the opportunity for continuous learning and to be adaptive and flexible as planning begins for the next DGA cycle.

Another dimension of making the DGA process adaptive and flexible, continuous, and supportive of continuous learning is the ability to incorporate new topics into the DGA process. By having a public comment period on the topics and questions for consideration in the DGA as well as comments in the Future Directions chapter, an opportunity is available to provide a forum to identify what new areas should be evaluated in the DGA process. The NASEM report recognized that the DGA should be able to incorporate new topics of public health significance and suggested steps to enable such evolution so that the DGA remain relevant to public health. These steps, summarized in Table 2 involve strategic planning, analysis of sources of evidence, synthesis and interpretation of the evidence, and the federal review and update of the DGA.

The utility of these steps was demonstrated by the process between 2010 and 2015 to include dietary patterns in the DGA and between 2015 and 2020 to incorporate birth–24 mo, pregnancy, and lactation into the work of the 2020 DGAC. In addition, the NASEM workshop report, *Sustainable Diets, Food and Nutrition*, used these potential steps on introducing a new topic to address the question of whether sustainability could be included in future DGA processes (14).

A challenge to consider in adding a new topic to the DGA is the need to expand the advisory committee membership to assure that relevant expertise is included in the committee as well as the broader scope of evidence review and evaluation that would be needed. Although not addressed by the NASEM report, in some cases it might be appropriate to develop a process that is parallel or complementary to the DGA such as developing a set of guidelines that can complement the DGA and be incorporated by reference. For example, the Physical Activity guidelines are a separate set of guidelines that work well with the DGA and are referenced by the DGA (15). The process to develop each set of guidelines allows the appropriate expertise and evidence evaluations to be incorporated in a way that focuses the scope of work given the constraints under FACA for the time period for the advisory committee to exist.

Another impactful way to link the DGA with key aspects of the food system is to clearly articulate how the DGA will factor into policy decisions in areas such as access to healthful food choices, affordability of a healthful dietary pattern, and sustainability of the food system. Because the DGA is the scientific cornerstone for federal policy in food and nutrition, it makes sense that recommendations in the DGA be used by agencies in program development.

Managing bias and conflict of interest.

Part of the vetting process for committee members included a background check and, before finalizing the committee

TABLE 2 Steps for integrating new topics into the *Dietary Guidelines for Americans* (DGA) (14)¹

Steps	Input needed
Strategic planning	Define the relation of the proposed topic to the purpose of the DGA
	 Specify the nature and aspects of the topics that are relevant to the DGA
	 Develop a plan for addressing the topic across cycles of the DGA
Analysis	 Utilize technical experts to define relevant research questions and data sources for systematic reviews and data analysis
Synthesis and interpretation	 Include the relevant topics in the call for nominees so that relevant expertise is identified for the advisory committee
	 Evaluate systematic reviews, data analysis, and food pattern modeling to develop conclusions for advice to the Secretaries of HHS and USDA on the topic.
Federal review and update	 Utilize the advisory committee findings and conclusions to revise the DGA to incorporate the topic

¹HHS, Department of Health and Human Services.

membership, all potential nominees were required to submit OGE form 450, Confidential Financial Disclosure Report that was reviewed by the USDA Office of Ethics before appointing the committee, rather than after the appointment as done in previous years. Committee members were appointed as Special Government Employees who are subject to federal employee ethics laws and regulations and received ethics training upon appointment and annually thereafter. Certain of these steps have been part of appointing the DGAC in previous years; however, in response to the NASEM report recommendations, steps were put in place to address potential bias or conflict of interest before finalizing the appointment to the 2020 DGAC. Additional details on the committee selection and appointment process can be found on the website for the 2020–2025 Dietary Guidelines (16).

The HHS and USDA indicated that they were not able to implement the NASEM recommendation to use a third party to identify qualified candidates or to take public comment on the committee's provisional membership prior to finalizing the committee membership. In part this decision was related to time and cost constraints for the USDA and HHS, because the NASEM report was released very close to the point that the process to establish the advisory committee needed to be initiated. In addition, the federal government was not able to resolve privacy concerns related to requesting comments on the provisional members of the committee. However, as noted above, several new review steps were implemented to improve the management of bias and conflict of interest.

Adopt state-of-the-art processes and methods.

Adopting state-of-the-art processes and methods is an ongoing, continuous process across cycles of the DGA. Clearly, strengthening of the systematic review process, including the addition of staff with expertise in this methodology, was done by the Nutrition Evidence Systematic Review (NESR) team before the work of the 2020 DGAC began (17). In addition, the separation of responsibilities between the NESR staff and the advisory committee was clear. An essential role for the NESR staff was to execute the analytical protocols whereas the advisory committee was responsible for developing these analytical protocols, evaluating and grading the evidence, and developing conclusions and advice based on the evidence. The use of systematic reviews is now fully integrated into how the advisory committee addresses questions that require an evaluation of published research. Such integration has been evolving since the 2010 DGAC report and is now based on a rigorous protocol-driven methodology that can be updated to remain current with evolutions in methodology for systematic reviews. For past DGA cycles the DGAC has, at times, relied on existing, published systematic reviews, and evaluation is needed of whether those systematic reviews should be re-examined and updated with the current methodology and with protocols more relevant to the DGAs.

In response to the NASEM recommendation, a peerreview process was implemented for the systematic reviews to evaluate that the committee's draft conclusions were consistent with the evidence reviewed. The Agricultural Research Service (ARS) within the USDA recruited scientists from several federal agencies and departments, who were not otherwise involved in the DGAC process, to provide the peer reviews. Two reviewers were assigned to each systematic review. The DGAC subcommittees found the input from peer reviewers who were external to the DGAC useful, responded to the comments, and revised the draft conclusions, as needed, before the conclusions were made available as drafts on the DGA website. Once posted on the DGA website, the draft conclusions were available for public comment.

In addition to systematic reviews, a separate crosscutting DGAC working group was appointed to evaluate the evidence based on data analysis of federal datasets, such as NHANES, and food pattern modeling. The NASEM report recommended that the USDA and HHS standardize the approach to determining nutrients of public health concern to improve evaluation of status across cycles of the DGA. The 2020 DGAC developed and presented a flow chart for determining when under- or overconsumption of a nutrient or food component should be considered a nutrient or food component of public health concern (5). Future cycles of the DGA will demonstrate whether the USDA and HHS adopt this methodology.

The NASEM report discussed various ways that technology could be used to improve food pattern modeling and make it more adaptable for variations in food preferences and nutrient needs, such as linear programming and stochastic modeling. However, the technology has not yet been updated, in part due to the short time frame between publication of the NASEM report and initiation of the 2020–2025 DGA cycle. Because dietary patterns are an integral component of the DGA, improvements in food pattern modeling are essential to illustrate how various dietary patterns can be developed to meet nutrient and health goals.

In every cycle of the DGA since 1980, the approach for reviewing the evidence to support the DGA has been strengthened, including during the 2020–2025 cycle by improving the process for development and evaluation of the systematic reviews. The DGAC, as a result of its work, identified improvements that can be considered for future cycles, especially with regard to food pattern modeling.

Recommendation to consider a systems approach

The NASEM report recommended the need for research to incorporate a systems approach into the DGA process (2). This recommendation (The secretaries of USDA and HHS should commission research and evaluate strategies to develop and implement systems approaches into the DGA. The selected strategies should then begin to be used to integrate systems mapping and modeling into the DGA process) was emphasized in the Integration chapter of the DGAC report (5). In addition, the Integration chapter commented on the systems-related context for effective use of the DGA that illustrates the importance of a systems approach. This context includes sustainability of the food system, socioeconomic factors such as equity and access to healthful dietary patterns, and the relevance of behavioral economics. The wording of the NASEM recommendation indicates that work is still needed to understand the most appropriate ways to integrate systems approaches with the process to develop the DGA.

The NASEM recommendation emphasized the importance of research and development of strategies to integrate systems thinking and utilize systems mapping and analysis relevant to the DGA process. The nature of the recommendation acknowledges that moving to incorporate systems thinking will require different types of scientific expertise outside of nutrition and food science to evaluate diet and health relations in a broader body of evidence.

Consideration of Americans at various health status

The NASEM report suggested that "The purpose of the DGA is to provide science-based nutritional and dietary information and guidelines for the general public" that form the basis for "any federal food, nutrition, or health program" and this purpose is based on the National Nutrition Monitoring and Related Research Act (18). The report emphasized that the proposed audience for the guidelines should be the general public rather than focusing only on "healthy" people, because of the prevalence of diet-related

chronic diseases in the American population. The NASEM report also recognized the significance of the new mandate (i.e. the Agricultural Act of 2014 [7]) to include women who are pregnant and the birth–24 mo population as part of the general population. In the 2020 review of evidence, studies with people who have overweight and obesity, are at risk of diet-related chronic diseases, or diagnosed with diet-related chronic diseases as well as populations that included pregnant or lactating women and infants from birth–24 mo were included in the evidence portfolios.

The DGA are relevant to the American population as a whole, including people at-risk of diet-related diseases and people living with those diseases as well as people who are considered healthy. Consequently, studies that include all of these categories are incorporated in the evidence reviewed by the advisory committee, as suggested in the NASEM report. However, the conclusions do not address recommendations for treatment or management of diet-related chronic diseases, which are not within the scope of the DGA.

Conclusion

Throughout the history of the DGAs the process has evolved iteratively. Implementation of recommendations from the NASEM report on redesigning the process has resulted in several changes that are consistent with the principles articulated for improving the integrity of the DGA. The implementation also illustrates that there are opportunities for continued evolution for more transparency, public engagement, strengthening of evaluation methodology, and continuity among cycles. Establishing topics and questions in advance of appointing and charging the DGAC was a new step and further work is needed to develop an understanding of the importance of public engagement in this process. Implementing this process creates the opportunity to guide the DGA process to focus on recommendations and advice that is of greatest relevance to nutrition and public health for the American people.

Throughout the work of the 2020 committee, the public could comment on the work of the committee, which was interested in feedback and input that would improve the evaluation of evidence. Although the largest portion of comments (~74%) were form letters with the same content, the more limited portion of unique comments that provided critical feedback on the protocols and available evidence were useful to improve the work of the committee. Because of the importance of continuous planning across cycles of the DGA, the NASEM report recommended a planning and continuity group that could "...monitor and curate evidence generation, ... identify and prioritize topics for inclusion in the DGA, and ... provide strategic planning support..." The Future Directions chapter in the 2020 report identifies areas where such continuity of planning will be important.

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