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Article

Translating Whole Grain Guidance into U.S. Federal Nutrition Programs: Considerations for Increasing Intake and Maintaining Program Effectiveness

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Abstract

Background & Objectives: Whole grains are an important component of healthy dietary patterns, but intake in the U.S. population remains low. Federal nutrition programs can help address this gap through their broad coverage and reliance on meal pattern and nutrition standards based on the Dietary Guidelines for Americans (DGAs). The 2025–2030 DGAs continue to identify whole grains as part of a healthy dietary pattern, emphasizing fiber-rich whole grains, while prioritizing protein, recommending reductions in added sugars, and addressing the level of food processing. As a result of these new guidelines, the Cereals & Grains Association convened multiple stakeholders from across the food system to examine how changes to the DGAs may influence federal nutrition program standards and ultimately whole grain intake among the beneficiaries of these programs in the United States. **Findings:** Potential changes to program standards can improve the availability of whole grain foods and increase their whole grain content, but offering foods does not mean they will be consumed. Effective translation requires an integrated consideration of nutritional standards, operational feasibility, affordability, access, participant acceptance, and continuous improvement through monitoring and adjustment. Greater emphasis on protein and processing can complement whole grain guidance, but depending on implementation and communication, it could unintentionally reduce whole grain consumption. Dietary modeling, coordinated planning, realistic implementation timelines, and regular program evaluation can help predict and potentially avoid these consequences. **Conclusions:** Successful implementation of new nutritional standards should be assessed by meaningful increases in whole grain consumption while maintaining diet quality, affordability, participation, and program effectiveness. **Significance and Novelty:** This work integrates scientific evidence with multidisciplinary perspectives to identify practical considerations for translating whole grain guidance into federal nutrition programs.

Keywords: whole grain; dietary guidelines; federal nutrition programs; WIC; school lunch

1. Introduction

Whole grains have been a critical component of healthy diets and recommended by the Dietary Guidelines for Americans (DGAs) for many years, yet intakes remain far below recommended levels. Federal nutrition programs, such as the National School Lunch Program (NSLP), School Breakfast Program (SBP), Summer Food Service Program (SFSP), Child and Adult Care Food Program (CACFP), and Special Supplemental Nutrition Program for Women, Infants, and Children (WIC), can help address this gap in whole grain intake due to their wide reach in providing millions of children and adults with healthy foods and meals. In fact, an increase in whole grain consumption over the past decade has been reported by some of these programs (Fox and Gearan 2019; Matsuzaki et al. 2025).

The 2025–2030 DGAs, which provide the basis for federal nutrition standards, continue to identify whole grains as part of a healthy dietary pattern, emphasizing fiber-rich whole grains. The guidelines also prioritize protein, reductions in added sugars, and consideration of the level of food processing (U.S. Department of Health and Human Services and U.S. Department of Agriculture 2025a). These priority areas can be complementary but will depend on how they are translated into standards for federal nutrition programs. Changes in food group priorities may impact program-wide costs, availability, operational feasibility, and participant acceptance with potential implications for program effectiveness. Careful translation is also important for whole grains because grains require some processing for food safety and edibility, and shifts in nutrition standards can impact the availability, acceptance, and intake of whole grain foods.

To examine these potential implementation issues, the Cereals & Grains Association (CGA) convened a group of stakeholders with multidisciplinary expertise. This manuscript integrates the convening discussions with relevant evidence to identify practical considerations for translating whole grain guidance into federal nutrition program standards in ways that preserve and increase whole grain consumption while maintaining diet quality, program feasibility, affordability, and participant acceptance.

2. Development of the Convening

The convening included 16 participants with expertise across nutrition science, agriculture, food production, federal nutrition programs, and consumer communications. The discussion was moderated by CGA over two half-days of virtual conversations. All discussions were recorded, and a transcript was generated at the conclusion of both days. The transcript was reviewed to identify key themes, challenges, solutions, and areas of uncertainty. ChatGPT (5.5) was also utilized to review the transcripts and identify any additional themes or challenges not previously identified.

3. Program Context for Whole Grain Guidance

3.1. Whole Grain Intake and the Role of Federal Nutrition Programs

Increasing whole grain intake has been a key recommendation of the DGAs since 2005, and translation of these guidelines into federal nutrition programs has been instrumental in increasing whole grain intake due to their large reach across populations, especially children. In fiscal year 2025, WIC served approximately 6.9 million women, infants, and children, while the NSLP, SBP, SFSP, and CACFP collectively served 9.3 billion meals (Hodges and Jones 2026). These programs have established definitions for whole grain-rich foods and standards for the amounts that are required to be offered. Current regulations define a whole grain-rich food as one in which $\geq 50\%$ of the grain content is whole grain and any remaining grain in the food must be enriched (U.S. Code of Federal Regulations, 7 CFR 210.2).

Federal nutrition programs apply the concept of whole grain-rich differently. In the NSLP and SBP, 80% of grains offered each week must be whole grain-rich, and the remainder must be enriched (U.S. Code of Federal Regulations, 7 CFR 210.10 and 7 CFR 220.8). CACFP requires at least one grain serving per day across all eating occasions to be whole grain-rich (U.S. Code of Federal Regulations, 7 CFR 226.20). WIC requires 75% of breakfast cereals on each state agency's authorized food list to include a whole grain as the first ingredient, and qualifying breads must contain at least 50% whole grains with the remaining grains enriched. The 2024 WIC Food Package revisions also expanded the variety of authorized whole grain options (U.S. Code of Federal Regulations, 7 CFR 246.10).

Long-term evidence from school nutrition programs supports that strong, workable nutrition standards can improve the whole grain content of meals, leading to improved intake for participants. Following the implementation of the Healthy, Hunger-Free Kids Act of 2010, the whole grains component of the Healthy Eating Index score for school lunches increased from 25% (2009–2010) to 95% of the maximum by 2014–2015 (Fox and Gearan 2019). A recent National Health and Nutrition Examination Survey (NHANES) analysis demonstrated increases in whole grain intake among youth

attending school, with the improvements most concentrated in students with consistent participation in the school lunch program rather than those who participated infrequently or not at all (Matsuzaki et al. 2025). However, federal nutrition programs generally supplement diets rather than provide all the foods in participants’ diets. Therefore, their impact on whole grain intake depends not only on the foods offered but also on program participation, food selection and consumption within the program, and dietary intake outside of the program. Studies on the impact of WIC package changes for increasing whole grain consumption have been mixed (Odoms-Young et al. 2014; Slavin et al. 2023), which may be attributable to these factors. This evidence indicates that nutrition standards can increase access to whole grain foods, which may increase intake, but adequate whole grain intake also depends on consumption of whole grain foods outside of those provided by federal nutrition programs.

3.2. From Whole Grain Guidance to Whole Grain Consumption

The ultimate goal of translating whole grain guidance into actionable nutrition standards in federal nutrition programs is to promote whole grain intake while maintaining overall nutritional quality and program effectiveness. As shown in Figure 1, standards can only influence intake when qualifying foods are available, selected, and consumed. During implementation, factors such as affordability, accessibility, administrative burden, and participant acceptance should be evaluated to ensure a program meets the goal of increasing whole grain consumption. These implementation considerations were discussed in depth during the convening and are examined more closely in the next section.

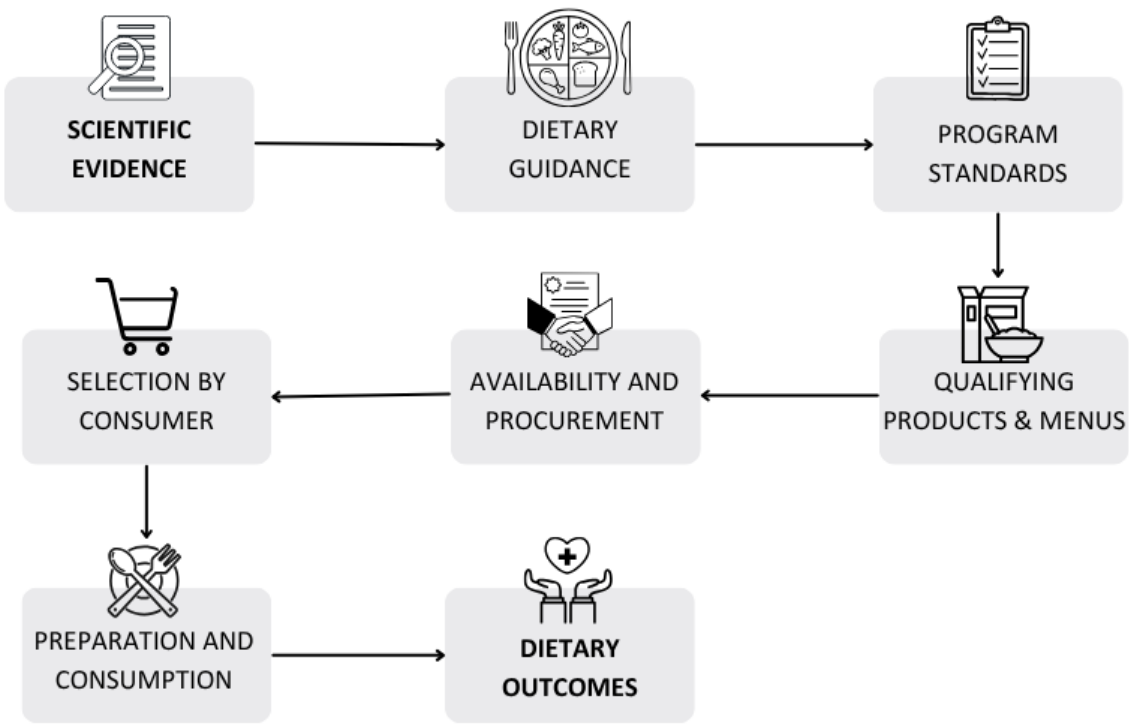


Figure 1. Implementation steps to consider in translation of whole grain guidance to whole grain consumption in federal nutrition programs.

4. Implementation Considerations for Whole Grain Guidance

4.1. Translation of Scientific Evidence to Dietary Guidance

In agreement with scientific evidence, the 2025–2030 DGAs continue to recognize whole grains as part of a nutrient-dense diet and now prioritize fiber-rich whole grains. However, whole grain guidance is provided within a broader set of dietary priorities that increase the prominence of protein foods and minimize intake of added sugars and “highly processed foods.” These priorities can be complementary, but the overall impact on diet will depend on how these are translated into federal nutrition program standards.

The emphasis on protein does not require less emphasis on whole grains. While they are not classified as a protein source, cereal grains can contribute meaningful amounts of protein when consumed regularly as part of mixed dishes or in combination with legumes and other plant protein sources (Bouchard et al. 2022). Furthermore, whole grains contain other critical nutrients, such as fiber, vitamins, and minerals. This may enable programs to increase protein content while maintaining an emphasis on whole grains and other important components of mixed meals. However, modeling is needed to determine how different protein scenarios may impact grain servings, cost, and dietary quality.

Added sugars recommendations, particularly the recommendation of no added sugars for children ≤ 10 years, represent another area where translation decisions could impact whole grain offerings. School nutrition programs and WIC are currently implementing added sugar limits on foods offered through their programs, and a further restriction could reduce the availability of qualifying foods, create availability and reformulation challenges, or encourage substitution with non-nutritive sweeteners (which are also recommended to be limited but not completely excluded). These effects will be particularly relevant for grain foods, such as breakfast cereals, which must satisfy whole grain and added sugar requirements simultaneously. Translation of this recommendation should evaluate the effect of these combined standards on product availability, acceptance, and potential impact on whole grain consumption.

In the consideration of dietary patterns, the role of grain foods that are not whole grains should also be considered for nutrient intake. Previous guidance recommended that any refined grains in the diet should be enriched. Enriched grains can provide a valuable contribution to folate, iron, thiamin, riboflavin, niacin, and other nutrients. Dietary modeling by the 2025 Dietary Guidelines Advisory Committee reported that incremental reduction in refined grains from the diet may place some individuals, such as females, at risk of insufficient folate or iron intake (U.S. Department of Health and Human Services and U.S. Department of Agriculture 2025b). This demonstrates the importance of modeling diets, including the removal of certain foods and what they are most likely to be replaced with. Modeling realistic substitutions of whole grains, enriched grains, and protein foods seems necessary to provide an informative basis for evaluating the nutritional impacts of any changes to program requirements.

4.2. Feasibility and Operational Capacity

The feasibility of whole grain guidance depends on whether program operators and retailers have the operational capacity to implement them. That capacity differs across school meals, CACFP, and WIC due to different infrastructures, personnel, procurement, and participant selection processes. Thus, the translation of guidance into program standards should consider the settings in which meal programs operate and any constraints based on equipment, staffing, training, products, and implementation times.

Physical infrastructure is particularly critical for school meal programs. Several participants noted that many schools no longer have full production kitchens and depend on centralized preparation of meals that can be heated and served with limited equipment and labor (Hauge et al. 2015). For whole grain foods, processing can support safety, transportation, portion control, affordability, and feasibility within these operational constraints. Recommendations to reduce or

limit “highly processed foods” should consider these constraints across all foods served, but particularly grain foods, which require some degree of processing for safety and edibility and may need additional processing to remain feasible and acceptable within program settings.

Staffing, training, and administrative requirements can have an impact similar to physical infrastructure, as many food service staff lack the training to prepare meals for large groups of individuals from scratch. A qualitative study of nine school food service directors interviewed after the implementation of revised meal standards set out in the Healthy, Hunger-Free Kids Act of 2010 reported that staff had to learn new products, recipes, preparation methods, and compliance procedures (Asada et al. 2017). The key challenges resulting from the implementation were procuring acceptable products and preparing them in a way that was acceptable to the children they serve. The food service directors stated that staff training, product testing, and sufficient implementation time would help support food service personnel to ensure better compliance with program standards. More recent evidence suggests these constraints remain relevant today (Zuercher et al. 2024). These findings demonstrate the reality that new nutritional standards are being integrated into systems that are already managing substantial operational demands.

The layering of multiple criteria onto foods and meals offered through federal nutrition programs can also create additional operational consequences. Currently, school and CACFP operators must identify foods that satisfy meal pattern, whole grain, added sugar, and sodium requirements while remaining affordable, available through existing channels, and acceptable to participants. Layering additional restrictions on added sugars or processing may further narrow the range of qualifying whole grain products, particularly for commonly consumed foods such as breakfast cereals. Consideration of these multiple criteria as well as sufficient implementation time, product testing, and coordination with manufacturers would help preserve variety while avoiding unintended reductions in whole grain offerings.

Procurement and implementation timelines also influence the feasibility and effectiveness of nutritional standards. School districts often plan menus and solicit bids well in advance of when foods are served. Abrupt changes in product specifications can be detrimental to existing contracts, inventory, and menu planning. A rapid increase in demand for certain foods can also be a strain on manufacturers and distributors. This was experienced during the implementation of the whole grain-rich school meal standards when schools had limited product availability and manufacturers had limited time to reformulate and align production with demand (Hauge et al. 2015). While the availability of whole grain-rich options has markedly improved since then, the lessons remain relevant. Implementation timelines should account for procurement cycles, contracting, reformulation, and demand forecasting rather than assume compliant products can be supplied immediately and consistently.

Convening participants noted that administrative complexity may be a particular burden for providers operating under CACFP. Many childcare providers purchase foods through traditional retail channels and may not have the specialized nutrition or procurement staff needed to help navigate the current standards. These providers can experience difficulty determining if retail products meet whole grain requirements and in practice may rely on approved product lists or familiar items because reading ingredient labels, calculating grain contributions, and maintaining documentation can be laborious. If future standards add qualifications for protein, fiber, or processing, the administrative burden could increase and unintentionally narrow the foods that providers serve in their establishments. These providers could benefit from simplified specifications and expert technical assistance to improve compliance and preserve variety.

The challenges for WIC programs are also unique, as eligible products must be state authorized, available at retail, selected by WIC participants, and consumed within the household. Convening participants noted that household cooking skills and equipment are potential constraints for achieving increased intakes of whole grains, particularly if the requirements favor cooking from scratch over foods requiring less preparation. This is supported by research that also suggests inability to identify eligible grain foods in stores, particularly when signage is unavailable (Hammad

and Kay 2024). To achieve nutritional effectiveness, implementation of new standards should consider the variety of household situations, including caregiver time availability, skills for meal preparation, and product knowledge.

Overall, these considerations suggest that implementation strategies should evaluate feasibility and operational support. Feasibility constraints should not limit greater integration of whole grains into nutrition programs but should be addressed in a way that provides the time and flexibility needed to implement standards that have the desired effect of increasing consumption of whole grains.

4.3. Affordability and Accessibility

Affordability and accessibility are important factors to consider for both federal nutrition programs and the participants. Affordability determines if programs, operators, retailers, manufacturers, and participants can absorb the cost associated with making or purchasing qualifying foods and ensuring they are consumed. Accessibility includes the operational resources, purchasing power, and geographic location that determine available foods. Whole grain standards in federal nutrition programs should evaluate affordability and accessibility to ensure that standards are applied consistently across populations and programs without limiting choices or participation among those with fewer resources.

Participants at the convening noted that federal nutrition programs operate with limited budgets. When new dietary standards are applied without an increase in funding, programs may face budget tradeoffs that impact procurement, staffing, or preparation. The cost of qualified foods and ingredients is an important factor impacting affordability, but there are many other aspects of cost to consider. For example, a minimally processed whole grain ingredient may not be the lowest cost option when considering the time, labor, and equipment needed to prepare the food. Formulated whole grain foods may carry a higher unit price but reduce preparation burden and food waste. Thus, affordability should consider entire food packages and meals being prepared under realistic operating conditions rather than only evaluating ingredient prices.

The evaluation of the overall meals becomes particularly important with the increased emphasis on proteins in the 2025–2030 DGAs. Convening participants expressed concern that if this guideline is translated into increasing the amount of animal proteins provided in nutrition programs, it could constrain budgets to the point that there would be insufficient resources for other food groups, including whole grains. This may have further implications for meal reimbursement rates if the cost of producing a compliant meal is increased. This will be particularly important for schools offering meals to all students at no charge. Whole grains, along with legumes, may provide more economical ways to increase protein. However, the impacts of changes in standards on cost and nutritional quality should be modeled prior to implementation to determine the potential impact and provide opportunities to consider ways to mitigate increasing costs.

Outside of institutional settings, affordability also influences individuals' selection and purchasing of whole grain foods. Results from studies in low-income populations as well as adult caregivers suggest that whole grain foods are perceived as more expensive, which may create a barrier for meeting whole grain recommendations (Chea and Mobley 2019; Nicklas et al. 2013). While this is only perception and may not reflect true price differences, it still may influence purchasing behavior.

Federal nutrition programs, such as WIC, have helped to reduce perceived and real financial barriers by including whole grain foods in WIC food packages. In the WIC Infant and Toddler Feeding Practices Study II, children whose families participated in WIC at 48 months of age were more likely than non-participants to consume whole grain foods at 60 months (Borger et al. 2022). Most caregivers reported that their children consumed whole grain breakfast cereals, breads, and other whole grain foods provided in the WIC package. However, intake remained low in participants and non-participants. Still, these results indicate that access to whole grain foods through the WIC program supported consumption among families with limited incomes. Changes to standards that

unintentionally reduce the variety of whole grain foods available could unintentionally reduce consumption of whole grains.

Ensuring access is also critical where there are greater financial or administrative burdens. For example, large school districts may be able to negotiate better pricing by volume, while small rural districts may lack negotiating power and face higher transportation costs. CACFP providers may be limited to purchasing food through retail channels, unable to leverage institutional pricing. WIC participants in rural areas may also have limited selection through retail channels, which could impact nutrient intake. If processing or other nutrient criteria remove currently available whole grain products from qualifying lists, the effect may be more pronounced in rural areas, small districts, or communities with small retail establishments. Evaluating the implications of new standards based on geographic availability and distribution would help ensure access for those with fewer resources.

Affordability and accessibility should not be considered as competing priorities but as critical components of improving whole grain intake of program participants. Implementation of nutrition standards should consider realistic costs, including purchasing, preparation, reimbursement adequacy, and accessibility concerns for individuals in different geographic locations with fewer resources. These assessments can identify where more targeted assistance may be needed to ensure improved intake of whole grains and other nutritious foods.

4.4. Participant Acceptance and Consumption Behaviors

Implementation of whole grain standards in federal nutrition programs should be evaluated by whether participants select and consume them, not just by what foods are offered. A standard may be scientifically reasonable, operationally feasible, and financially sustainable but produce limited nutritional benefit if the foods are unfamiliar, difficult to identify or prepare, or unacceptable in taste, texture, or appearance. Therefore, participant acceptance is a critical component of implementation and should inform product selection, menu development, implementation timelines, and evaluation across nutrition programs.

The convening discussion highlighted the gap between consumer attitudes toward whole grain foods and their behavior. The 2025 Whole Grain Consumer Insights study conducted by the Oldways Whole Grains Council provided much of the background for the discussion (Oldways Whole Grains Council 2025). The online survey included 1,500 U.S. adults aged 18–92 years and was nationally representative for age, sex, race, ethnicity, region, and income. Almost 75% of those surveyed thought they should increase their intake of whole grains, and 57% reported choosing a whole grain option at least half of the time. Health was the most frequently reported reason for increasing whole grain intake. However, there are many competing priorities influencing their choices. The primary factors limiting whole grain consumption were taste, cost, availability, convenience, habit, and difficulty identifying whole grain foods. These results suggest that favorable attitudes toward whole grain can coexist with practical and sensory constraints that may limit intake. However, as participants in federal nutrition programs encounter recommendations to prioritize protein and select fewer “highly processed foods,” these may also become factors that limit whole grain intake, particularly if they are unable to identify foods containing whole grains and those that are fiber-rich. Communications should distinguish the processing needed to produce safe and acceptable whole grain foods from the product characteristics that reduce nutritional quality, particularly for programs where providers and participants have a choice about what to serve or purchase. Otherwise, program providers and participants may avoid healthy whole grain options because they are packaged. Evaluation of how participants interpret nutrition standards and the impact on whole grain intake should be considered during implementation.

The importance of participant acceptance is particularly important for WIC, where purchase of an eligible product does not ensure it will be consumed in the home. The picky eating of children was the number one cited reason for not purchasing WIC-approved foods. Unfamiliarity with how to prepare some foods and limited product options were also frequently stated barriers to consumption

(Hammad and Kay 2023). In the study by Chea and Mobley, fewer than half of low-income consumers could correctly identify the whole grain foods presented to them (Chea and Mobley 2019).

Acceptance is also critical in school meals, as selection of foods may not guarantee consumption. In the 2025 Whole Grain Consumer Insights study, 82% of respondents agreed children would eat whole grains if they were prepared in an appealing way, and a similar percentage agreed that introducing whole grains in childhood would increase the likelihood of continued consumption in adulthood (Oldways Whole Grains Council 2025). Incorporating taste testing, gradually introducing reformulated products, and including sufficient variety are all strategies that may increase acceptance and whole grain intake by children in schools. Familiar foods may also help with implementation of whole grain standards. Convening participants noted that familiar foods such as breads, rice, and tortillas are ways to integrate whole grains into recognizable meals.

Participant acceptance is important to evaluate as standards and products change, particularly when the recommendations for whole grains are accompanied by messages to prioritize protein and reduce added sugars and “highly processed foods.” Potential restrictions on added sugars and processing should be evaluated for effects on taste, selection, and consumption. Additionally, measures of product identification, purchase, preparation, and consumption can help identify if well-intended changes to dietary guidance may result in unintended rejection of whole grain foods.

4.5. Monitoring, Planning, Coordination, and Evaluation

Effectively implementing dietary guidance and nutrition standards in federal nutrition programs requires a process that involves coordination and communication between multiple stakeholders and a plan for monitoring and evaluating the effectiveness of the programs. The recent changes to the 2025–2030 DGAs from previous versions make coordinated planning even more critical. While the 2025–2030 DGAs continue to encourage whole grains, they also introduce a greater emphasis on protein foods, reducing added sugars, particularly for young children, and fewer “highly processed foods.” As this guidance is translated into federal nutrition program standards, qualifying food lists, procurement specifications, and reimbursement requirements, tensions may start to emerge. As discussed previously, greater emphasis on animal proteins may impact food budgets and change the composition of meals, limiting the space available for grain foods. Further restrictions on added sugars may impact acceptability and variety of foods for operators to choose. Processing-based criteria could inadvertently disadvantage whole grain products, even though grains require cleaning, dehulling, milling, cooking, heat treatment, and other forms of processing before they can be safely consumed (Li et al. 2019).

Prior to the release of new standards, agencies should examine how different approaches may impact whole grain availability and consumption. This should include examining if changes in protein requirements would replace or complement whole grain foods; if additional animal protein foods would impact meal costs and reimbursement; if processing criteria would exclude whole grain breads, cereals, tortillas, pastas, and other commonly consumed grain foods; if added sugar restrictions would limit the number and variety of qualifying whole grain foods or increase the use of non-nutritive sweeteners; if qualifying products could be obtained and prepared in school and retail environments; and most importantly if the resulting meals and food packages remain nutritionally balanced, affordable, operationally feasible, acceptable, and meaningfully contribute to whole grain intake. Clear guidance on processing will be particularly important. Agencies, manufacturers, and program operators need workable criteria for processing expectations that ensure nutritious whole grain foods can still be formulated and acceptable to achieve nutritional objectives.

Coordination of revised standards should extend across the whole food system to avoid unintended consequences for whole grain availability and consumption. Farmers and seed suppliers influence which grains enter production. Millers use processing techniques to create ingredients, which manufacturers formulate into foods that meet program requirements. Distributors and retailers determine the availability of these foods, and program operators and participants select and prepare qualifying foods for consumption. These stakeholders operate on different timelines, so a

coordinated approach to standard changes would allow time to anticipate demand, establish sourcing, evaluate costs, adjust product formulation, and expand distribution.

Phased implementation may also be useful to facilitate the translation process. Testing different meal patterns, product criteria, procurement approaches, and communications could identify potential issues before changes are implemented broadly. Incremental changes within certain time frames can also allow time for adjustment, which may improve compliance with standards, ensure availability, and promote consumption.

Ongoing monitoring and evaluation should examine how changes in policy influence whole grain intake. Critical measures would include the amount and type of whole grain foods offered, selected, and consumed; alterations to the whole grain content of meals; product availability across regions; food costs; menu variety; and program participation. These measures could inform the need for any adjustments to product specifications, availability, and timelines for implementation to avoid unintended reductions in whole grain intake.

The current transition in dietary guidance provides an opportunity to utilize a more coordinated approach to ensure that overall nutritional quality in federal nutrition programs is improved without further diminishing the intake of whole grains.

5. Research and Evaluation Priorities

The convening discussions identified several evidence needs across the different implementation considerations discussed in section 4. Table 1 summarizes the research and evaluation priorities, focusing on how changes in dietary guidance and standards may impact whole grain consumption and any potential unintended nutritional, financial, or operational consequences.

Table 1. Research and evaluation priorities.

Priority area	Key points for evaluation	Potential research approaches
Translation of scientific evidence to dietary guidance and nutrition standards	Do changes in recommendations around whole grains, protein, added sugars, and processing have the potential to impact nutrient adequacy, dietary quality, cost, or amount of whole grains in federal nutrition program meals and food packages?	Dietary and meal-pattern modeling with different approaches to nutrition standards
Feasibility and operational capacity	Can qualifying foods be produced, distributed, prepared, and served through nutrition programs within current operational constraints? What additional infrastructure, lead times, financial resources, training, and support would be needed?	Supply chain assessments and implementation research across different program settings and facilities
Affordability and accessibility	How would revisions to standards impact meal and food package costs and access across geographic regions and program sizes?	Cost and reimbursement modeling; assessment of product availability and geographic distribution
Participant acceptance and consumption behaviors	Are qualifying whole grain foods identifiable, selected, prepared, and consumed? Do changes in standards impact participation and actual whole grain intake?	WIC redemption and home use measures; school and care center meal selection and consumption studies; school plate waste and participation studies; population dietary intake assessments
Monitoring implementation	Do changes in the standards or the emphasis on protein and processing displace whole grains, narrow product variety, or alter other meal components in practice?	Phased implementation or pilot markets; dietary intake assessments within programs and across population demographics

6. Conclusion

There is strong and consistent evidence that whole grains are an important component of healthy dietary patterns and contribute to long-term health benefits. However, whole grain intake remains well below recommended levels in the United States. Federal nutrition programs have considerable potential to help participants move closer to meeting whole grain recommendations because of their extensive reach and established whole grain standards, but success depends on how DGAs are translated into program nutrition standards and the impact these have on the availability of whole grain foods. Coordinated attention to nutritional quality, operational capacity, affordability, access, participant acceptance, and actual consumption will be needed. Dietary modeling, phased implementation, stakeholder coordination, and ongoing evaluation can help identify and address interactions among whole grain, protein, added sugars, and processing priorities. Implementation success should be judged by whether it increases whole grain intake while maintaining diet quality, participation, affordability, and program effectiveness.

Potential Conflicts of Interest: In the past 3 years, LMS has received research grants from Cereal & Grains Association, Kellanova, PepsiCo, and Ardent Mills. JLS has no conflicts to report.

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