Front-of-Package Nutrition Rating Systems and Symbols: Promoting Healthier Choices

Ellen A. Wartella, Alice H. Lichtenstein, Ann Yaktine, and Romy Nathan, Editors; Committee on Examination of Front-of-Package Nutrition Rating Systems and Symbols (Phase II); Institute of Medicine

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Summary

There is a long and rich history of government public health efforts to educate and inform the public about nutrition and healthy eating. The first daily food guide, published in 1916, paved the way for a host of scientific documents, reports, brochures, symbols, and educational campaigns including the Basic Seven Foods to the Food Guide Pyramid, and the Nutrition Facts Panel. As a result of efforts like these, Americans today have access to more information about nutrition than any previous generation. And yet the nation is facing a crisis of obesity and diet-related chronic diseases. While there are many factors that influence what and how Americans eat, it’s clear that there is a disconnect between dietary recommendations and actual consumption.

Most of the front-of-package (FOP) systems that have been developed to date follow in the tradition of providing consumers with nutrition information. The use of such systems implicitly assumes that consumers are receiving appropriate nutrition information, and that its impact can be enhanced by making it more prominent (i.e., putting it on the front of packages) and delivering it in a more concise form. After reviewing evidence and perspectives from a wide range of disciplines, the committee came to a different conclusion. Rather than refining existing informational approaches to communicating with the public about nutrition, the committee believes there is sufficient evidence to recommend that the Food and Drug Administration (FDA) and the United States Department of Agriculture (USDA) consider a fundamental shift in strategy. A new FOP system should move beyond simply informing consumers about nutrition facts.

The committee concluded that for a government-sponsored FOP system to help achieve population health benefits, its goal cannot be to only inform consumers about detailed nutrition content, but more importantly to encourage healthier choices and purchase behaviors. The committee concluded that this can be better achieved by a simple FOP symbol that serves as a signal or cue to consumers rather than by detailed information about the nutrient content of foods and beverages on the front of food packages. Similar approaches, like the Environmental Protection Agency (EPA) and Department of Energy’s (DoE) Energy Star® program have been highly successful in changing consumer purchase patterns for household appliances and electronics. Some non-governmental organizations as well as food manufacturers have already developed simple FOP symbols. The committee’s recommended approach builds on this foundation, is transparent, and uses the same regulatory criteria consistently across food categories.

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1 This summary does not include references. Citations for the findings presented in the Summary appear in the subsequent chapters.
THE COMMITTEE’S TASK AND APPROACH

At the direction of the Congress, the Centers for Disease Control and Prevention (CDC) asked the Institute of Medicine (IOM) to undertake a study to examine and provide recommendations regarding FOP nutrition rating systems and symbols. The FDA, and later the United States Department of Agriculture’s (USDA) Center for Nutrition Policy and Promotion, provided support. The study comprised two phases. The first phase focused on evaluating current systems and nutritional criteria and resulted in a report in 2010. The second phase committee was tasked to consider:

- The potential benefits of a single, standardized front-label food guidance system regulated by the FDA,
- Assessment of which icons are most effective with consumer audiences, and
- Development of conclusions about the systems and icons that best promote health and how to maximize their use.

The committee drew on guiding principles established in Phase I (shown in Box S-1) and the assessment, findings, and conclusions from Phase I as a starting point. In Phase II the committee conducted a comprehensive review of evidence. The committee drew from several sources of evidence that were directly relevant to its charge. In order to be comprehensive, the committee reviewed a range of material from academic, peer-reviewed literature and publicly available industry, government, and marketing sources. In its review and analysis, the committee considered evidence and perspectives from a wide range of disciplines. The committee acknowledged the potential shortcomings of any FOP system (described in Phase I), and explored whether and how consumers might use the information provided by a FOP symbol system. Although recommendations about food preparation and consumption practices after purchase were beyond its task, the committee recognized that these practices have implications for health. The committee also recognized that in considering its task to evaluate the potential benefits of a single, standardized front-label food guidance system regulated by FDA, that it was not constituted to evaluate regulatory or related considerations involving universal implementation of a single, standardized system.

DEVELOPING A MODEL FOP SYMBOL SYSTEM

The committee’s review and analysis of the available evidence (reviewed in Chapters 4 through 6) led to the finding that among the variety of FOP systems in the marketplace, the predominant focus was on provision of nutrient information at the point-of-purchase. The committee reviewed evidence about consumer use of nutrition information and product choices, understanding of FOP labeling systems, and effects of food package information on consumer choices. The evidence suggested that an approach that provides nutrition information only and is not interpretive would have limited success in encouraging healthier consumer food choice and purchase decisions (also discussed in Chapter 6).

Thus the committee concluded that a shift is needed from an informational approach to an interpretive one that quickly and easily provides guidance to encourage healthier food choices. In addition, an effective FOP symbol system would encourage food and beverage companies to
provide healthier choices through reformulation or development of new products, and encourage retailers to highlight those healthier products. Given the goal of increasing healthier choices, the committee looked at a number of FOP and shelf-tag nutrition rating systems that had demonstrated some success in the marketplace.

The committee concluded from its review of evidence that research on FOP symbol systems is limited and no single FOP symbol system provided evidence in support of its use over all others. Furthermore, FOP systems alone as currently developed do not show consistent evidence of dramatically influencing consumer choice. However, there is some limited evidence that FOP systems that are simple and easy to understand do encourage choice of healthier products. This is particularly the case in settings where consumers are making decisions quickly such as in grocery stores with many product choices before them.

**BOX S-1**

**Phase I Guiding Principles**

In evaluating the nutrition science of front-of-package (FOP) labeling, the committee adopted four guiding principles to set the stage for the nutritional assessment of FOP symbol systems. These guiding principles were intended to assist the committee in identifying the systems and elements of systems most important to assisting American consumers in making healthier food choices. They were also intended to assist in identifying nutritional criteria that could be implemented in the current food environment. The guiding principles are:

1. A well-balanced, high-quality diet consistent with the recommendations of the *Dietary Guidelines for Americans* is essential for the health of Americans, and FOP labeling is one tool among many geared toward helping Americans make healthful choices. Other such tools include MyPyramid*, the Nutrition Facts panel (NFP), and health and nutrient content claims.
2. Front-of-package systems will focus on nutrients or food components that are most strongly associated with diet-related health risks affecting the greatest number of Americans.
3. The information highlighted in FOP systems will be consistent with the NFP.
4. Front-of-package systems will apply to as many foods as possible.

*MyPlate replaces MyPyramid as the primary Federal government food group symbol and points consumers to the ChooseMyPlate.gov to learn how to apply the Dietary Guidelines.*
For consumers with limited resources, cost concerns may outweigh nutrition in times of economic hardship, and cognitive approaches are unlikely to motivate the use of nutrition information on the food label among consumers who find the label difficult to understand. Thus, it is not surprising that the cognitive approach of providing more information about the nutrition characteristics of a food on FOP labels has not been consistently effective across consumer groups. Providing special emphasis to nutritionally at-risk subpopulations such as those with low incomes, low literacy/numeracy skills, or low levels of education, is an important component of the evaluation process. However, the committee recognizes that any FOP system is likely to have a narrow influence on the food purchase decisions of consumers whose access or resources to purchase healthier foods is impacted by economic and/or geographic limitations.

Among consumers with low literacy skills, the evidence reviewed indicates that when a simple rating system is used, differences between high and low literacy adults in choosing the better product are diminished. Front-of-package food labeling, especially using a simple symbol, might serve as a cue or signal for consumers, helping them distinguish between products of greater and lesser nutritional quality. These findings indicate that using simple symbols to summarize complex information about product quality may be especially valuable to low-literacy populations. From its review of existing FOP systems the committee identified four attributes that are common to most successful FOP systems:

1. simple, not requiring specific or sophisticated nutritional knowledge to understand the meaning;
2. interpretive, nutrition information was provided as guidance rather than as specific facts;
3. ordinal, offering nutritional guidance using a scaled or ranked approach; and
4. supported by communication, with readily-remembered names or identifiable symbols.

To illustrate, an example of a successful government labeling system identified by the committee is the EPA/DoE Energy Star® program. For many consumers, the Energy Star® label signals products that deliver high quality performance while saving energy and reducing operating costs. Consumer awareness of the label is high, and it appears to be effective in informing consumer purchases. Along with the characteristics identified above, key factors that have made the Energy Star® label so successful include: partnerships with key stakeholders; widespread market penetration; a dynamic and evolving program; and ongoing and multi-faceted promotions. Each of these factors has relevance for designing and implementing an effective and successful FOP nutrition rating system for food products, and when considered together with the totality of the available evidence, helped to inform the committee’s assessment of the characteristics needed for a successful FOP nutrition rating system.

The outcome of the committee’s assessment was a set of eight characteristics that would be needed in order for a FOP symbol system to be successful. Further, the committee determined that the system should carry an identifiable “health meaning,” an indication of the extent to which a product contains reasonable amounts of saturated and trans fats, sodium, and added sugars, considered harmful when consumed in excess or above a certain threshold. The eight characteristics identified by the committee are incorporated into its recommendation for a FOP symbol system.
RECOMMENDATIONS FOR FRONT-OF-PACKAGE SYSTEMS AND SYMBOLS

From its review of the available evidence, the committee concluded that there are no flawless FOP symbol systems in the marketplace—each has strengths and limitations that must be weighed against the purposes of FOP systems. Taking this conclusion into account, the committee also concluded that a single, standardized system that is easily understood by most age groups and appearing on all food products would be the best option to maximize its effectiveness in encouraging consumers to make healthier food choice and purchase decisions. Such a system would:

- Provide prominent calorie content and serving size information and targeted information related to nutrients and most foods with added sugars that are strongly associated with public health concerns for Americans in one symbol system;
- Facilitate comparisons of nutritional value within food categories as well as comparisons of nutritional value across most food categories; and
- Encourage product reformulation.

The approach and criteria for evaluating nutrients to limit in a FOP symbol system should be transparent and nonproprietary by being based on and/or consistent with FDA’s labeling regulations.

Based on its review and interpretation of the totality of the available evidence and weighing the strengths and limitations of a single, standardized FOP system, the committee makes the following recommendation for a system with eight characteristics that is simple, interpretive, ordinal, and supported by communication.

Recommendation 1

FDA and USDA should develop, test, and implement a single, standard FOP system to appear on all products. The system should have the following characteristics:

- One simple, standard symbol translating information from the Nutrition Facts panel (NFP) on each product into a quickly and easily grasped health meaning, making healthier options unmistakable;
- Displaying:
  - Calories in common household measure serving sizes (shelf tags to be used on bulk items such as fruits and vegetables as well as packaged goods), and
  - Zero to three nutritional “points” (for saturated and trans fats, sodium, and added sugars);
- Appearing on all grocery products, allowing consumers to compare food choices across and within categories (determination for universal implementation of the symbol system must be preceded by consumer testing and conducted in conjunction with an education and promotion program);
- Appearing in a consistent location across products;
- Practical to implement by being consistent with nutrition labeling regulations;
- Integrated with the NFP so that the FOP symbol system and the NFP are mutually reinforcing;
• Providing a non-proprietary, transparent translation of nutrition information into health meaning; and
• Made prominent and useful to consumers through an ongoing and frequently refreshed program of promotion integrating the efforts of all concerned parties.

Current FDA regulations will require modifications and/or exemptions, and new regulations will need to be developed along with food group specifications in establishing evaluative criteria. Because added sugars are not declared in the NFP, the total sugars declaration in the NFP could be footnoted with a statement such as “Contains no added sugars” or “Contains a qualifying amount of added sugars”. A single standard FOP system should be the only FOP system appearing on products. For products not meeting the evaluative criteria for an ordinal indicator symbol, the FOP system should still display calorie and serving size information. Examples illustrating symbol systems that are consistent with these recommendations are presented in Chapter 7. An approach to determining the number of points displayed on the FOP is described in the following section.

APPROACH TO EVALUATING PRODUCTS AND SETTING CRITERIA FOR NUTRIENT LIMITS

All products would display calories per serving size in common household measures and points\(^2\) for saturated and trans fats, sodium, and added sugars, as critical components to include in a FOP symbol system. The Phase I report concluded that added sugars would not be a component of a FOP nutrition rating system because of: insufficient evidence about the contribution of added sugars beyond calories to the most pressing diet-related health concerns among Americans; the inability to distinguish analytically between added and naturally-occurring sugars in foods without obtaining proprietary product information and including that information on the NFP; and the relatively small number of food categories with high amounts of added sugars. The committee reconsidered the Phase I conclusions based on evidence published since the release of the Phase I report, specifically the recently released 2010 Dietary Guidelines for Americans and identification of a way to evaluate added sugars content for a symbol system. The 2010 Dietary Guidelines for Americans is the nutrition policy document of the Federal government. Reducing intakes of calories from added sugars and reducing consumption of foods that contain added sugars are among its key recommendations. These products contribute to energy intake; generally contain no or low amounts of saturated and trans fats, and sodium; and provide little or no essential nutrients unless fortified, which is not consistent with FDA fortification policy\(^3\). A relatively small number of food and beverage categories contribute more than half the added sugars in the American diet.

The committee developed an approach to evaluate added sugars based on products categorized as Sugars, Sweets, and Beverages in the USDA Food and Nutrient Database for Dietary Studies. This approach addresses previous issues around determining added sugars content; any product that is categorized as Sugars, Sweets, and Beverages and contains added sugars would not be eligible to earn any FOP points. This avoids allowing some major contributors to added sugars, i.e., beverages, sugars and sweets, to erroneously appear to be

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2 The term “points” is used to indicate that a critical component nutrient met its defined criteria.
3 21 CFR 104.20
healthful because they are low in saturated and trans fats, and sodium and consequently would they would not be eligible for any FOP points.

The strong recommendation from the 2010 Dietary Guidelines for Americans for limiting intake of added sugars, along with the development of an approach that avoided the need to analyze products for added sugars, led the committee to conclude that added sugars are an important component that should be included in a FOP nutrition rating system. This conclusion is consistent with the principle that a FOP symbol system should not inadvertently promote products that are inconsistent with current Federal dietary guidance.

**Evaluation of Nutrients for FOP Points**

The process developed to evaluate saturated and trans fats, sodium, and added sugars in a product occurs in two steps. The first step, determining eligibility for inclusion in the FOP system (for gaining any points), excludes food or beverages from earning any FOP points if they don’t meet eligibility criteria.

In the second step, a product that meets the eligibility criteria is evaluated for FOP points for saturated and trans fats, sodium, and/or added sugars based on qualifying criteria that assess acceptable amounts. The more points displayed, the more the food or beverage helps the consumer avoid less healthy levels of those nutrients identified as being associated with diet-related health risks. For example, a food or beverage product could earn one point for an acceptable level of sodium, one for an acceptable level of saturated and trans fats, and/or one point for an acceptable level of added sugars. Saturated and trans fats are considered together to facilitate communication about limiting consumption of foods containing solid fats, as recommended in the 2010 Dietary Guidelines for Americans. Points for a nutrient component would be displayed using a ranked or scaled (ordinal indicator) symbol as discussed above in the Model for a Symbol System and illustrated in Chapter 7 using hypothetical examples. If a food or beverage product contained any one of the nutrient components of concern in amounts exceeding specified criteria limits, the product would not be eligible for any points and would display only calories per serving size (examples are illustrated in Chapter 7). Products that do not meet the eligibility and qualifying criteria for points would also display calorie and serving size information only.

From a nutrient perspective, this two-step process would mean that for each nutrient there are potentially two levels of evaluation, one to see if a product is eligible to earn any points at all (eligibility criteria) and one for earning a point (qualifying criteria). As examples of how products would earn points, 100 percent whole wheat bread would earn three FOP points, graham crackers two points (one each for saturated and trans fats and sodium), an oat and peanut butter bar one point (for sodium), and soup crackers no points because it exceeds the disclosure/disqualifying level for sodium.

A similar system could be developed for shelf tags to be used on unpackaged or bulk items such as fruits and vegetables as well as packaged goods. The determination of threshold values for a product to earn FOP points, based on regulations for nutrition labeling and nutrient content claims is explained in Chapter 7. The committee evaluated the nutrient content of a limited number of example foods and beverages in consideration of developing eligibility and qualifying criteria based on current regulations for nutrition labeling and nutrient content claims; these products are shown in Appendix E.
Alignment with the Regulatory Environment

The committee recognizes that there should be alignment between eligibility and qualifying criteria for a FOP symbol system and Federal regulations for nutrient content claims. However, the eligibility and qualifying criteria for a FOP symbol system described in this report are not entirely consistent with current regulations for nutrient content claims. As part of developing and testing an FOP symbol system, inconsistencies between potential criteria and current regulations will need to be addressed. The committee views the described criteria as starting points for extensive computer modeling to determine if the criteria are consistent with appropriate ratings for saturated and trans fats, sodium, and added sugars across a wide variety of foods and beverages. The committee recognized that the criteria need to balance restrictiveness with practicality to allow products to earn FOP system points appropriately. As with all regulatory actions, public input will be required for implementation of a new FOP symbol system and its criteria.

PROMOTION, EVALUATION AND RESEARCH

Promotion

The committee found there are a number of ways in which social marketing strategies and theory can be applied to FOP labeling to influence nutrition-related awareness, knowledge, attitudes, and behaviors. Based on its review of existing public health campaigns the committee concluded that an effective FOP system implementation program must be a well-funded, sustained effort that is dynamic, refreshed on a regular basis, and carried out by a public-private partnership. Campaigns should carefully attend to specific behavioral goals that are effective and actionable. Comprehensive, multi-level approaches that attend to pertinent environmental and policy constraints, socio-cultural influences, and individual-level factors relevant to dietary behavior change in the target population are encouraged.

Monitoring, Evaluation and Research

The committee acknowledges that costs will be incurred by federal agencies responsible for implementation of the recommendations for a FOP system and that an additional investment will be needed to support an education and promotion campaign, along with evaluation of the campaign and research to test and refine educational messages. Nevertheless, the committee concluded that implementation of its recommendations offers the best option to maximize the effectiveness of a FOP symbol system in encouraging consumers to make healthier food choice and purchase decisions. Thus, there should be ongoing monitoring and periodic evaluation of a new FOP symbol system. Components of monitoring and evaluation should include:

- Identifying the steps in reaching the goal of healthier choices;
- Conducting research designed to assess success in reaching each step; and
- Enhancing system components and taking corrective action where necessary.

Research should be conducted to assess the needs and preferences of target audiences to better understand factors that influence consumer food choice and purchase behavior. In addition, formative research is necessary to test and refine messages and determine the best
approaches and channels to promote a FOP system. Monitoring through both process and outcome evaluation is needed to assess the effectiveness and impact and to refine and strengthen program components. Providing special emphasis to nutritionally at-risk subpopulations, such as those with low incomes, low literacy/numeracy skills, or low levels of education, is an important component of the evaluation process. In addition to monitoring and evaluation, an assessment of the impact of a FOP symbol system on product reformulation is necessary. Monitoring, evaluating, and improving a FOP symbol system entails identifying the steps to reach the goal of making healthier food choices; conducting research designed to assess success at each step of the process; and promoting action and program improvement. Ongoing research will also help to guide and strengthen implementation efforts and help inform any corrective action where necessary. Together an implementation effort complemented by an ongoing monitoring, evaluation and research program will be needed to assess the effectiveness and provide a continual feedback mechanism for a new FOP symbol system. Based on these conclusions the committee makes the following recommendation:

Recommendation 2

Implementation of a new FOP symbol system should include a multi-stakeholder, multi-faceted awareness and promotion campaign that includes ongoing monitoring, research, and evaluation.

CLOSING REMARKS

In its review of the available evidence the committee determined that there is a need for a FOP symbol system designed to encourage consumers to make healthier food choices and that a single, simple FOP symbol system, aligned with current dietary guidance and consistently applied across food product categories could be useful to encourage consumers to purchase healthier foods and beverages.
Front-of-Package Nutrition Rating Systems and Symbols: Promoting Healthier Choices

Committee on Examination of Front-of-Package Nutrition Rating Systems and Symbols (Phase II)

Food and Nutrition Board

Ellen A. Wartella, Alice H. Lichtenstein, Ann Yaktine, and Romy Nathan, Editors

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—Goethe
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COMMITTEE ON EXAMINATION OF FRONT-OF-PACKAGE NUTRITION RATING SYSTEMS AND SYMBOLS

ELLEN A. WARTELLA (Chair), Professor, Department of Communication Studies, Northwestern University, Evanston, IL
ALICE H. LICHTENSTEIN (Vice Chair), Gershoff Professor, Jean Mayer USDA Human Nutrition Research Center on Aging, Tufts University, Boston, MA
LINDSAY H. ALLEN, Center Director, USDA, ARS Western Human Nutrition Research Center, Davis, CA
JAMES CRIMMINS, Adjunct Professor and Marketing Consultant, Northwestern University, Chicago, IL
BRIAN ELBEL, Assistant Professor of Medicine and Health Policy, New York University School of Medicine and Wagner Graduate School of Public Service, New York, NY
TRACY A. FOX, Nutrition Consultant and President, Food, Nutrition, & Policy Consultants, LLC, Washington, DC
ELIZABETH HOWLETT, Professor of Marketing and Logistics, Sam M. Walton College of Business, University of Arkansas, Fayetteville, AR
MATTHEW W. KREUTER, Professor, Health Communication Research Laboratory, Washington University, St. Louis, MO
ANUSREE MITRA, Associate Professor, Kogod School of Business, American University, Washington, DC
FRANCES H. SELIGSON, Consultant, Hershey, PA
MARY T. STORY, Professor, Division of Epidemiology and Community Health, University of Minnesota, Minneapolis
VIRGINIA WILKENING, Alexandria, VA (resigned from committee April 2011)

CONSULTANTS

KELLY BROWNELL, Rudd Center, Yale University, New Haven, CT
CHRIS CASEY, Washington University, St. Louis, MO
LILA RUTTEN, SAIC, Inc, Frederick, MD
MARLENE SCHWARTZ, Rudd Center, Yale University, New Haven, CT
AMY SCOTT, UPBrand Collaborative, and Washington University, St. Louis, MO
VIRGINIA WILKENING, Alexandria, VA (as of May 2011)

IOM Staff
ANN YAKTINE, Study Director
ROMY NATHAN, Senior Program Officer
JANET MULLIGAN, Senior Program Associate for Research
SAMANTHA RO Botham, Senior Program Assistant
ANTON BANDY, Financial Officer
GERALDINE KENNEDO, Administrative Assistant
LINDA D. MEYERS, Director, Food and Nutrition Board
REVIEWERS

This report has been reviewed in draft form by individuals chosen for their diverse perspectives and technical expertise, in accordance with procedures approved by the NRC Report Review Committee. The purpose of this independent review is to provide candid and critical comments that will assist the institution in making its published report as sound as possible and to ensure that the report meets institutional standards for objectivity, evidence, and responsiveness to the study charge. The review comments and draft manuscript remain confidential to protect the integrity of the deliberative process. We wish to thank the following individuals for their review of this report:

Nancy M. Childs, Department of Food Marketing, St. Joseph’s University, Philadelphia, PA
Karen Glanz, Perelman School of Medicine and School of Nursing, University of Pennsylvania, Philadelphia, PA
Jeanne P. Goldberg, Friedman School of Nutrition Science and Policy, Tufts University, Boston, MA
Edward Groth III, Groth Consulting Services, Pelham, NY
Lisa Harnack, School of Public Health, University of Minnesota, Minneapolis, MN
Suzanne Harris, International Life Sciences Institute, Washington, DC
Joanne R. Lupton, Texas A&M University, College Station, TX
Suzanne Murphy, Cancer Research Center of Hawaii, University of Hawaii at Manoa, Honolulu, HI
Marion Nestle, Department of Nutrition, Food Studies & Public Health, New York University, New York, NY
Sarah Roller, Kelley Drye & Warren, LLP, Washington, DC
Bruce A. Silverglade, Washington, DC
Linda Van Horn, Feinberg School of Medicine, Northwestern University, Chicago, IL

Although the reviewers listed above have provided many constructive comments and suggestions, they were not asked to endorse the conclusions or recommendations nor did they see the final draft of the report before its release. The review of this report was overseen by Diana Birt, Iowa State University, and Elena O. Nightingale, Washington, DC. Appointed by the National Research Council and Institute of Medicine, they were responsible for making certain that an independent examination of this report was carried out in accordance with institutional procedures and that all review comments were carefully considered. Responsibility for the final content of this report rests entirely with the authoring committee and the institution.
Preface

American consumers today enjoy a wide array of food products to choose from but they also face a daunting challenge when trying to make healthful food choices. This challenge is exacerbated by the proliferation of front-of-package and shelf tag nutrition rating symbols and logos intended to communicate nutrition information about the food products contained in the packages. Not surprising, consumers trying to make choices in a short amount of time among packages cluttered with information and with different nutrition rating systems may have difficulty choosing healthier products.

In Phase I of the study to examine front-of-package nutrition rating symbols and systems the committee found that obesity and its associated chronic diseases are the health risks affecting the greatest number of Americans that are most strongly associated with diet. The committee also found that Americans consume too many calories, saturated and trans fats, and added sugars, and too much sodium; leaving other important nutrients at risk. Given these findings, the Centers for Disease Control and Prevention (CDC) with additional support from the Food and Drug Administration (FDA) of the U.S. Department of Health and Human Services and the Center for Nutrition Policy and Promotion (CNPP) of the U.S. Department of Agriculture asked the committee to carry out Phase II of the study to consider the benefits of a single, standardized front-label food guidance system; assess which icons or symbols would be most effective with consumers; and develop recommendations about the systems and icons that best promote health and ways to maximize their use.

In Phase II, three new members, Jim Crimmins, Brian Elbel, and Elizabeth Howlett, joined the Phase I committee. Over the course of Phase II, the committee conducted an extensive review of both peer-reviewed and non-reviewed evidence. They also conducted a public workshop to gather information from experts outside the committee, and to hear from stakeholders. Invited speakers included: Chung-Tung Jordan Lin and Alan Levy from the FDA; Kelly Brownell from the Yale University Rudd Center; Regina Hildwine from the Grocery Manufacturer’s Association and Marianne Smith Edge from the International Food Information Council; Christina Zaradoolas from Mount Sinai School of Medicine, John Kozup from Villanova University; and Christine Johnson from the New York Department of Health. In addition, interviews with representatives from the food manufacturing industry were carried out and the committee engaged several consultants. Kelly Brownell, Marlene Schwartz, and Lila Rutten served as unpaid consultants to assist the committee in interpreting the evidence. Christopher Casey and Amy Scott developed exemplar graphic representations of front-of-package symbol systems. The contributions of the workshop speakers, industry interviews, and the work of the consultants were invaluable to the committee in guiding its discussions and developing recommendations. On behalf of the committee, I would like to thank them for their excellent work.

I would also like to express my gratitude to the members of the committee, whose tireless efforts and determination made this report possible. The committee is also grateful to the Institute of Medicine study team: Ann Yaktine, study director; Romy Nathan, senior program officer, Janet Mulligan, Research Associate, and Samantha Robotham, senior program assistant, Geraldine Kennedo, administrative assistant, and Anton Bandy, financial officer. I am especially grateful to Linda Meyers, director of the Food and Nutrition Board, who provided guidance to the committee throughout both phases of the study.

The committee’s findings about the current food package environment, together with evidence that consumer food choice behavior has not changed in spite of a myriad of front-of-package
nutrition rating systems clearly suggests that the time has come for a paradigm shift from information-based nutrition rating systems to one that encourages consumers to make healthier food choices and purchasing decisions. The committee’s recommendations are presented as guidance to the study sponsors in developing a front-of-package symbol system that is easily understood and maximizes the opportunity to better inform and guide consumers’ toward more healthful food choices.

Ellen A. Wartella, Chair
Alice H. Lichtenstein, Vice-Chair
Committee on Examination of Front-of-Package Nutrition Rating Systems and Symbols (Phase II)
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