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CONCISE CLINICAL GUIDANCE

Nutrition and Front-of-Package Food Labeling as a Catalyst for Cardiovascular Health: 2025 ACC Concise Clinical Guidance

A Report of the American College of Cardiology Solution Set Oversight Committee

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PREFACE

The American College of Cardiology (ACC) has a long history of developing documents (eg, decision pathways, appropriate use criteria) to provide clinicians with guidance on both clinical and nonclinical topics relevant to cardiovascular care. In most circumstances, these documents have been created to complement clinical practice guidelines and inform clinicians about areas where evidence is new and evolving or where sufficient data are more limited. Despite this, numerous gaps persist, highlighting the need for more streamlined and efficient processes to implement best practices in patient care.

Central to the ACC's strategic plan is the generation of actionable knowledge—a concept that places emphasis on making clinical information easier to consume, share, integrate, and update. To this end, the ACC has shifted from developing isolated documents to creating integrated "solution sets." These are groups of closely related activities, policies, mobile applications, decision-support tools, and other resources necessary to transform care and/or improve heart health. Solution sets address key questions facing care teams and offer practical guidance to be applied at the point of care. They use both established and emerging methods to disseminate information for cardiovascular conditions and their related management. The success of solution sets firmly rests on their ability to have a measurable impact on the delivery of care. Because solution sets reflect current evidence and ongoing gaps in care, the associated tools will be refined with time to match changing evidence and member needs.

Concise Clinical Guidance (CCG) documents are a key component of solution sets. Highly focused and limited in scope, CCGs provide recommendations where none currently exist and/or outline actions required for evidence to be implemented in practice for specific patient populations. CCG aims to illustrate clinical decision-making processes using tools (ie, figures, tables, and checklists) and limited in scope focusing on patient populations that share certain characteristics, such as conditions, subtypes, or lines of therapy. In some cases, covered topics will be addressed in subsequent expert consensus decision pathways, appropriate use criteria, clinical practice guidelines, and other related ACC clinical policy as the evidence base evolves. In other cases, these will serve as stand-alone policy and represent best standards.

Gurusher S. Panjrath, MBBS, FACC Chair,
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1. INTRODUCTION

Diet-related chronic diseases are the leading causes of death and disability in the United States, disproportionately affecting individuals from certain racial and ethnic groups and those of lower socioeconomic status. Adherence to healthy dietary patterns—characterized by low intake of saturated fat, cholesterol, sodium, and added sugars—is associated with a reduced risk of obesity, cardiovascular disease (CVD), type 2 diabetes, and several types of cancer. Accessible and informative food labeling plays a key role in empowering consumers to make healthier, more informed dietary choices.

Front-of-package (FOP) labeling is a key public health tool that supports healthier eating by simplifying nutrition information and highlighting key nutrients to limit—such as sodium, saturated fat, and added sugars.[1] This proposed FOP system is intended to supplement—not replace—the existing back-of-package (BOP) Nutrition Facts label. While the BOP remains a critical source of detailed nutrient information, interpretive FOP labeling

enhances transparency and enables consumers to make faster, healthier choices at the point of purchase.[1]

A growing body of scientific evidence supports the effectiveness of FOP labeling in guiding consumer behavior, particularly among populations at elevated risk for diet-related diseases. International experiences with standardized FOP systems have demonstrated improvements in consumer awareness, shifts toward healthier purchasing patterns, and, in some cases, product reformulation by manufacturers to meet nutritional standards.[2] Accordingly, the U.S. Food and Drug Administration (FDA) initiative to implement a standardized, mandatory FOP labeling system is well aligned with broader public health goals, including the prevention and reduction of obesity, CVD, and other nutrition-related conditions.[3]

This CCG outlines the rationale for supporting FDA-led FOP labeling initiatives, reviews the evidence on their effectiveness, and highlights key considerations for implementation. It represents the consensus of our committee on the importance of transparent, science-based labeling policies that prioritize public health and offer clear direction to food manufacturers. By endorsing a standardized FOP labeling system, we aim to foster a food environment where healthier choices are more visible, accessible, and achievable for all consumers.

In accordance with ACC's *Relationships With Industry and Other Entities* policy, relevant disclosures for the writing committee and comprehensive disclosures for external peer reviewers can be found in Appendices 1 and 2. To ensure full transparency, a comprehensive listing of the writing committee's relationships with industry and other entities, including those not relevant to this document, is available in an online Supplemental Appendix.

2. DEFINITIONS, AND ABBREVIATIONS

2.1. Definitions

Current dietary guidelines recommend limiting the intake of saturated fat, cholesterol, sodium, and added sugars to reduce the risk of chronic disease. The 2020-2025 Dietary Guidelines for Americans[4] advise that saturated fat should comprise <10% of total daily calories; however, some organizations recommend even stricter targets. The American Heart Association and American College of Cardiology advise limiting saturated fat to 5%-6% of total energy intake for individuals at risk of CVD.[5-8]

To support healthier dietary patterns and reduce the risk of CVD, clear and accessible nutrition information is essential. Food package labeling—particularly FOP systems—serves as a practical tool to guide consumer choices by quickly conveying key nutrient content. These labeling systems help identify products high in saturated fat, sodium, and added sugar, which are linked to increased cardiovascular risk. The following definitions outline terminology relevant to nutrition labeling and dietary quality.

BOP labeling: The standard Nutrition Facts panel is typically located on the back or side of a food package, providing detailed information on calorie content, macronutrients, micronutrients, and ingredients per serving.

Daily value: This represents the proportion of a recommended daily intake of a specific nutrient provided by 1 serving of a food, based on a 2,000-calorie reference diet.[1] It serves as a standardized tool to help consumers assess whether a food is high (≥20%) or low (≤5%) in a given nutrient, thereby facilitating comparisons across products and supporting informed dietary choices.

FOP labeling: A simplified, often color-coded, labeling system placed on the front of packaged food to provide quick, accessible nutritional information; designed to support healthier consumer choices by highlighting key nutrients to limit or encourage.

Traffic light labeling: A FOP labeling system that uses red, yellow, and green colors to respectively signal high, medium, and low levels of nutrients like fat, sugar, and salt, aiding consumers in making quick health-conscious decisions.

Ultra-processed foods: Industrial formulations are typically made with ingredients not used in home cooking (eg, hydrogenated oils, flavor enhancers, emulsifiers) and often contain high amounts of added sugar, salt, and unhealthy fat. Ultra-processed foods with such contents are associated with increased cardiovascular risk.

Nutrient profiling systems: Algorithms or scoring methods used to classify the nutritional quality of foods, often used as the basis for FOP labeling systems.

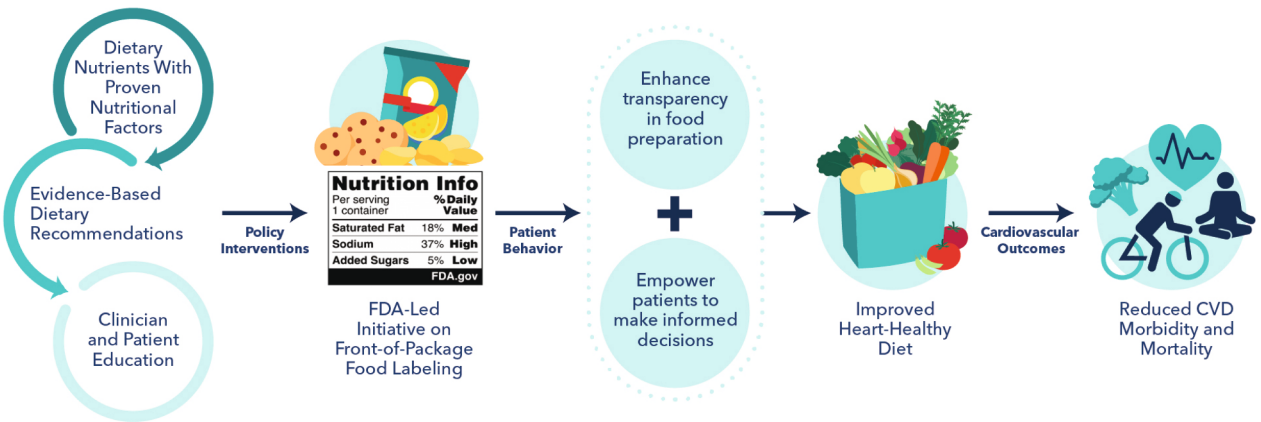
2.2. Abbreviations

BOP = back-of-package
CCG = Concise Clinical Guidance
CVD = cardiovascular disease
FDA = U.S. Food and Drug Administration
FOP = front-of-package

3. SUMMARY GRAPHIC

The summary graphic provides a visual overview of the connection between dietary patterns, food labeling policies, and cardiovascular health outcomes (**Figure 1**). It emphasizes the role of clinicians, public health stakeholders, and regulatory agencies in promoting FOP labels as a catalyst to shift purchasing behaviors, encourage product reformulation, and ultimately reduce the burden of CVD across populations. As labeling systems are adopted and studied, consumer data and health

FIGURE 1 Pathway From Nutrition to Food Labeling for Improved Cardiovascular Health



Clinician interaction with FOP labeling occurs at the point of consumer education, reinforcing behavior change and facilitating dietary adherence.

CVD = cardiovascular disease; FDA = U.S. Food and Drug Administration.

outcomes can inform future policy refinements and clinician education programs.

4. DESCRIPTION, RATIONALE, AND IMPLICATIONS

4.1. Role of Nutrition and Food Labeling in Cardiovascular Health

4.1.1. Nutritional Factors Impacting Cardiovascular Health

Nutrition is foundational to cardiovascular health. However, the overabundance of food choices and inconsistent messaging have created confusion among the public. Dietary components such as saturated fats, added sugars, sodium, and ultra-processed foods contribute to increased CVD risk. Conversely, diets rich in whole grains, fruits, vegetables, fiber, and unsaturated fats are associated with lower morbidity and mortality (Table 1).[7]

Key contributors to cardiovascular harm include:

- **Saturated and trans fats**, which elevate LDL cholesterol and accelerate atherosclerosis.
- **Refined carbohydrates and added sugars**, which trigger insulin resistance, visceral adiposity, and dyslipidemia.
- **High sodium intake**, which contributes to hypertension and heart failure.
- **Ultra-processed foods**, which are energy-dense, nutrient-poor, and associated with adverse metabolic outcomes.

In contrast, cardioprotective dietary components include:

- **Dietary fiber**, which improves lipid profiles, reduces inflammation, and enhances satiety.
- **Plant-based proteins** (such as legumes, nuts, and seeds), which lower cardiovascular mortality.
- **Potassium-rich foods**, which lower blood pressure and support vascular health.
- **Omega-3 fatty acids**, which prevent arrhythmias and lower cardiovascular mortality.

These principles are consistent across evidence-based guidelines (Table 2). Rather than micromanaging specific macronutrient targets, a whole-food, plant-forward approach offers a sustainable path to improved cardiovascular outcomes.

4.1.2. Evidence-Based Dietary Recommendations

4.1.2.1. Overview of Research and Guidelines

Evidence-based dietary recommendations have evolved across decades through research aimed at reducing cardiovascular risk and improving overall health. Although randomized clinical trials focused on hard endpoints are limited, multiple observational studies have examined the association of CVD mortality with dietary patterns. Numerous studies have demonstrated that diets rich in fruits, vegetables, whole grains, plant-based proteins, and healthy fats contribute to lower rates of heart disease, stroke, and other chronic conditions. Conversely, higher intake of processed foods, added sugar, low-

TABLE 1 Nutritional Factors Impacting Cardiovascular Health

Nutritional Factor	Impact on Cardiovascular Health
Added sugars[9-11]	■ Cardiovascular mortality increases with total sugars and fructose intake. ■ Consumption of >7.5% of calories from sugar is associated with increased cardiovascular death. ■ Sugar-sweetened beverages show a dose-dependent association with increased cardiovascular risk. Global data from 2020 attribute ~1.2 million CVD cases and 340,000 deaths to these beverages alone. ■ Reducing added sugar intake/sugar-sweetened beverages lowers risk for CVD.
Carbohydrates, refined[12-14]	■ Consuming high-glycemic index foods increases cardiovascular mortality.
Carbohydrates, whole grain, unrefined[15,16]	■ Consuming whole grains (2 servings/day) reduces the incidence of CVD.
Dairy/milk, animal vs vegetable[17,18]	■ Dairy foods are a heterogenous category. ■ Milk and butter increase cardiovascular mortality. ■ Cheese shows mixed effects: while high in saturated fat, some fermented cheeses may have neutral or modestly favorable effects on lipids due to calcium and probiotic content; however, processed cheese products tend to raise LDL cholesterol and may promote inflammation. ■ Substituting dairy milk with plant-based milk, particularly unsweetened, reduces cardiometabolic risk factors.
Dietary fiber[19,20]	■ Fiber intake reduces CVD via reduced inflammation and reduction of cholesterol reabsorption. ■ Total fiber reduces the incidence of CVD.
Essential nutrients (eg, omega-3 fatty acids, antioxidants, vitamin B12, iron)[21-24]	■ Marine n-3 (omega-3) levels are inversely related to cardiovascular mortality. ■ Iron deficiency is common in cardiac pathologies, but limited data prevent broad recommendations for replacement. ■ High levels of methylmalonic acid (an indicator of vitamin B12 deficiency) correlate with increased cardiovascular mortality. ■ Low levels of folate predict increased cardiovascular mortality in patients with T2DM. ■ Very low and very high levels of vitamin B12 predict increased cardiovascular mortality in patients with T2DM.
Polyunsaturated fats, monounsaturated fats[7,25]	■ Substitution of saturated fats with PUFA and MUFA reduces CVD and mortality.
Potassium (mEq = mg/molecular weight)[26-29]	■ Potassium-enriched salt substitute—partially replacing sodium chloride with various percentages of potassium chloride—may reduce blood pressure. In the largest trial to date (20,995 high-risk, older adults in China), using potassium-enriched salt substitute led to significant blood pressure reduction (-3 mmHg) and significant 12%-14% relative reductions in stroke, major cardiovascular adverse events, and all-cause mortality, with no increase in risk for hyperkalemia. ■ In the United States, concerns about using potassium-enriched salt substitutes include a lack of acceptance due to taste, as well as concerns for hyperkalemia in persons with chronic kidney disease and those taking potassium-sparing diuretics. ■ There have been observational studies showing high intake of potassium-rich foods from natural sources (fruits, juices, vegetables, and legumes) may lower blood pressure, lower incidence of stroke, and lower mortality, and might have benefits in chronic kidney disease. The ideal potassium intake by diet is from 3,500 to 5,000 mg per day.
Protein, animal vs vegetable[30-32]	■ Cardiovascular risk decreases with increasing plant protein intake. ■ High intake of animal protein increases cardiovascular mortality. Substituting plants for animal protein lowers cardiovascular mortality.
Saturated fats, *trans* fats, cholesterol[7,33-36]	■ Type and amount matters. *Trans* fats increase cardiovascular mortality (banned in the United States). ■ Saturated fat increases cardiovascular risk and mortality. ■ Improvement in lipid profiles with reduction in saturated fat can be negated if replaced by higher refined carbohydrate intake.
Sodium[37-39]	■ Low-sodium intake (1,500-2,300 mg/day) vs high-sodium intake (4,500 mg/day) diets safely lower blood pressure and prevent hypertension. Since most dietary sodium is already added during food processing or preparation, overall dietary eating plans should be low sodium to have the maximal effect. The ideal dietary sodium intake is <1,500 mg each day.
UPF ingredients[40-42]	■ UPF intake significantly increases CVD and cardiovascular mortality; however, if the ultra-processed plant-based food is high in fiber, low in sugar, saturated fat, sodium, and calories, it can be healthier than many other processed foods.

CVD = cardiovascular disease; LDL = low-density lipoprotein; MUFA = monounsaturated fatty acid (eg, avocados and many nuts can improve lipid profiles by lowering LDL cholesterol levels); PUFA = polyunsaturated fatty acid (eg, omega-3 and omega-6 fatty acids from walnuts and flaxseeds can lower LDL cholesterol and reduce inflammation); T2DM = type 2 diabetes mellitus; UPF = ultra-processed food.

calorie sweeteners, high- and low-carbohydrate diets, refined grains, *trans* and saturated fats, excessive sodium, and processed red meat are consistently associated with increased cardiovascular risk. Processed meats are typically defined as any meat that has been preserved by smoking, curing, salting, or with additional chemical preservatives. Examples of processed meats include bacon, lunch meats (eg, bologna, pastrami, canned meats, salami), ham, jerky, hot dogs, and sausage. These findings serve as the underpinnings of major guidelines including the 2025 ACC/American Heart Association (AHA) High Blood Pressure Guideline,[43] the 2019 ACC/AHA Primary Prevention of CVD,[44] and the AHA Diet and Lifestyle Recommendations.[45] In summary, these

TABLE 2 Summary of Nutrition and Lifestyle Recommendations From Major Evidence-Based Clinical Guidelines

Guideline	Level of Recommendation COR/LOE	Key Recommendations	Target Population
AHA Diet and Lifestyle Recommendations[45]		■ Emphasize fruits, vegetables, whole grains, lean proteins, and healthy fats ■ Limit saturated fats, *trans* fats, cholesterol, added sugars, and sodium	Designed for the general population to reduce overall cardiovascular risk through diet and lifestyle modifications
ACC/AHA Primary Prevention of CVD Guideline[44]	1 B 2a B 2a B 2a B 3 B	■ Increase intake of vegetables, fruits, legumes, nuts, whole grains, and fish ■ Replace saturated fat with dietary monounsaturated and polyunsaturated fats ■ Reduce amounts of cholesterol and sodium ■ Minimize the intake of processed meats, refined carbohydrates, and sweetened beverages ■ Avoid intake of *trans* fats	Targeted at individuals without established CVD to decrease atherosclerotic CVD risk
AHA/ACC/Multisociety High Blood Pressure Guideline[43]	1 A 1 A 1 A 1 A	■ Adopt DASH dietary pattern (diet rich in fruits, vegetables, whole grains, low-fat dairy products, with reduced content of saturated and total fats)[46] ■ Reduce sodium intake to <1,500 mg/day, but a ≥1,000-mg/day reduction in most adults ■ Increase potassium intake to goal of 3,500-5,000 mg/day, preferably achieved by a diet rich in potassium ■ Reduce alcohol consumption to ≤2 drinks/day in men and ≤1 drink/day in women*	Individuals with or at risk for high blood pressure

*More recent evidence indicates that alcohol is a carcinogen linked with ≥7 types of cancer: breast, colorectal, liver, esophageal, mouth, throat, and laryngeal.[47,48]

ACC = American College of Cardiology; AHA = American Heart Association; COR = Class of Recommendation; CVD = cardiovascular disease; DASH = Dietary Approaches to Stop Hypertension; LOE = Level of Evidence.

guidelines recommend consumption of a wide variety of fruits and vegetables, whole grains, and products made up mostly of whole grains; and healthy sources of protein (preferably plant-based, such as legumes, and nuts; fish and seafood as a substitute for red meat; low-fat or fat-free dairy) along with lean and unprocessed meat and poultry. The substitution of plant-based for animal protein is associated with lower all-cause mortality.[32]

Other recommendations include consumption of liquid nontropical vegetable oils (eg, canola, corn, olive, avocado, soybean and sunflower oils), preference for minimally processed foods, restricted or minimized intake of added sugars and dietary sodium, and limitation or avoidance of alcohol intake.

Together, these guidelines underscore the importance of adopting a holistic, dietary approach to prevent CVD and manage hypertension (Table 2). The convergence of evidence from clinical trials and epidemiological studies reinforces the role of a nutrient-dense, balanced diet as a cornerstone of both primary prevention and long-term management of heart disease.[43-45]

The interplay of dietary ingredients significantly influences heart health, particularly through mechanisms such as sugar-induced lipogenesis.[47,49,50] Excessive intake of refined sugars (fructose, high-fructose corn syrup, and sugar-sweetened beverages) triggers hepatic de novo lipogenesis, a metabolic process that converts surplus carbohydrates into fatty acids. These fats, predominantly stored as triglycerides, elevate blood lipid levels, contributing to dyslipidemia and cardiovascular risk. Concurrently, high sugar consumption exacerbates insulin resistance, compounding metabolic dysfunction. This intricate interaction underscores the synergistic effects of dietary components—where excess sugars, rather than acting in isolation, fuel pathways that amplify visceral, intramuscular, and intrahepatic adiposity and systemic inflammation. Mitigating such processes through balanced diets is critical for optimizing cardiovascular health and reducing disease burden.

4.2. FDA Nutrition Initiatives and Impact on Cardiovascular Health

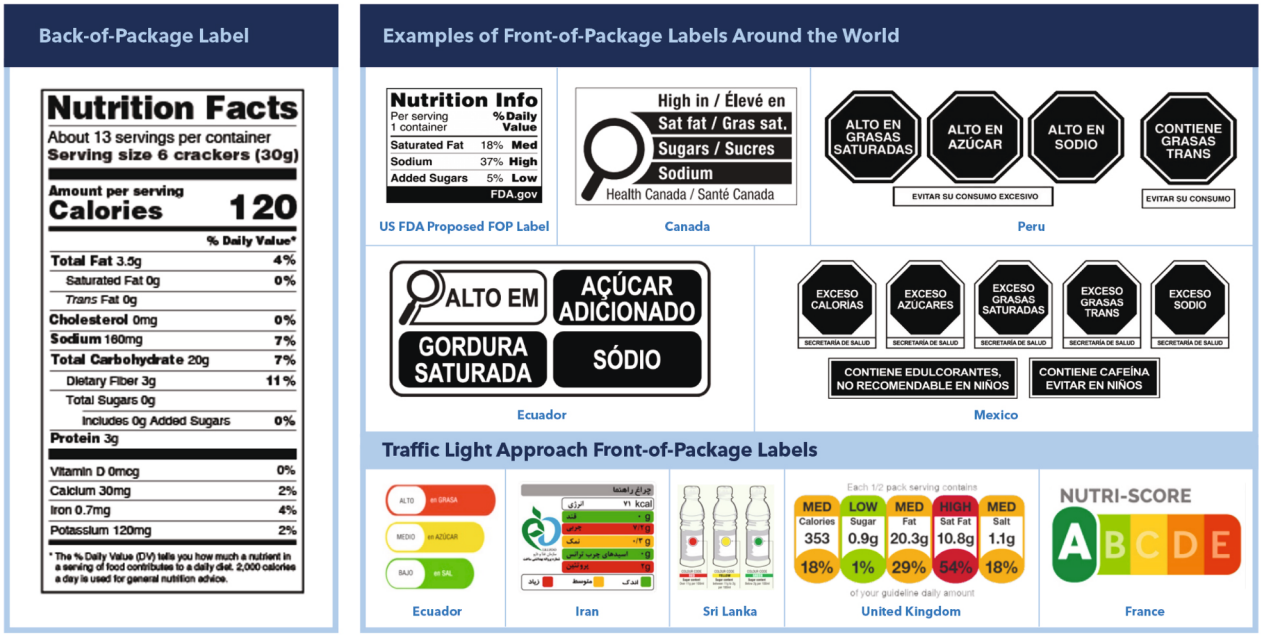
4.2.1. Standard Nutrition Facts Panel and the FOP Food Label

There are 2 types of nutrition facts labeling: BOP and FOP labeling (Figure 2). BOP labeling classically includes calories, total fat, saturated fat, *trans* fat, cholesterol, sodium, total carbohydrates, dietary fibers, added sugars, protein, and certain vitamins and minerals per serving.[51] This labeling is often confusing for consumers, with studies showing that even well-educated individuals may struggle to interpret the fat and carbohydrate content in the context of daily dietary needs.[52] The FOP labeling model is utilized to simplify nutritional information, facilitating healthier food purchasing.[1]

4.2.1.1. FDA FOP Labeling Requirements

FOP food labels are illustrations, symbols, and systems that are easy to understand, helping consumers convey useful nutrition-related information to make healthier dietary choices.[53] These graphical labels provide at-a-glance information on nutritional quality displayed at

FIGURE 2 Types of Nutrition Facts Labeling Systems



FDA = U.S. Food and Drug Administration; FOP = front-of-package.

the front of food and beverages to complement the detailed nutritional information on the back of the product.[54] FOP labels offer a more concise and effective way to communicate nutritional information, potentially influencing consumer behavior.[55] Labeling has been widely adopted around the world, with 44 countries—including 16 with mandatory policies—implementing government-endorsed FOP schemes. Countries that adopted such regulation, especially in Latin America (eg, Chile, Mexico, Uruguay), have documented declines in purchases of sodium, added sugars, and unhealthy fats—and manufacturers have accordingly reformulated products. The World Health Organization endorses FOP labels as supplementary nutrition information to support healthier dietary habits.[56]

In the United States, FOP labeling for prepackaged and processed foods primarily regulated by the FDA and the Nutrition Labeling and Education Act of 1990.[53] The basic nutrition label includes detailed information about a product's nutritional content and recommended serving size. Health claims or nutrient content claims can be included as part of the regulation for FOP labels. "Health claims" are statements or characterizations that describe the relationship between food and a health-related component, as validated through nutritional research. The FDA permits qualified health claims, which describe a potential relationship between a food or nutrient and a health-related condition, based on the best available scientific evidence and subject to strict regulatory criteria.[57] Nutrient content claims, on the other hand, indicate the amount of a specific nutrient (eg, "low sodium," "high fiber") in a product and must comply with FDA definitions for "high," "low," "free," or similar descriptors.

As part of the National Strategy on Hunger, Nutrition, and Health, a 2022 initiative to alleviate hunger and diet-related disease, the FDA is using consumer research to assist in developing a FOP labeling scheme that is more standardized and easier to interpret. One of the studies aimed to look at consumer responses to FOP labels to find metrics of improvement and ease in interpretation by using online questionnaires.[58]

In early 2025, the FDA proposed a rule to create a standardized FOP label designed to assist consumers in determining whether foods contribute to a healthy diet.[1] The newly designed FOP label would display the percentage of saturated fat, sodium, and added sugars per serving, 3 nutrients linked with diet-related chronic disease. Additionally, it will inform the consumer whether the product has a high, medium, or low amount of that specific nutrient, helping consumers understand the significance of each within their daily diet. This new proposal addresses inconsistencies in nutrient content claims, ensuring they align with current nutritional needs.

TABLE 3 Nutrition Facts Label Interpretation for Optimal Cardiovascular Health

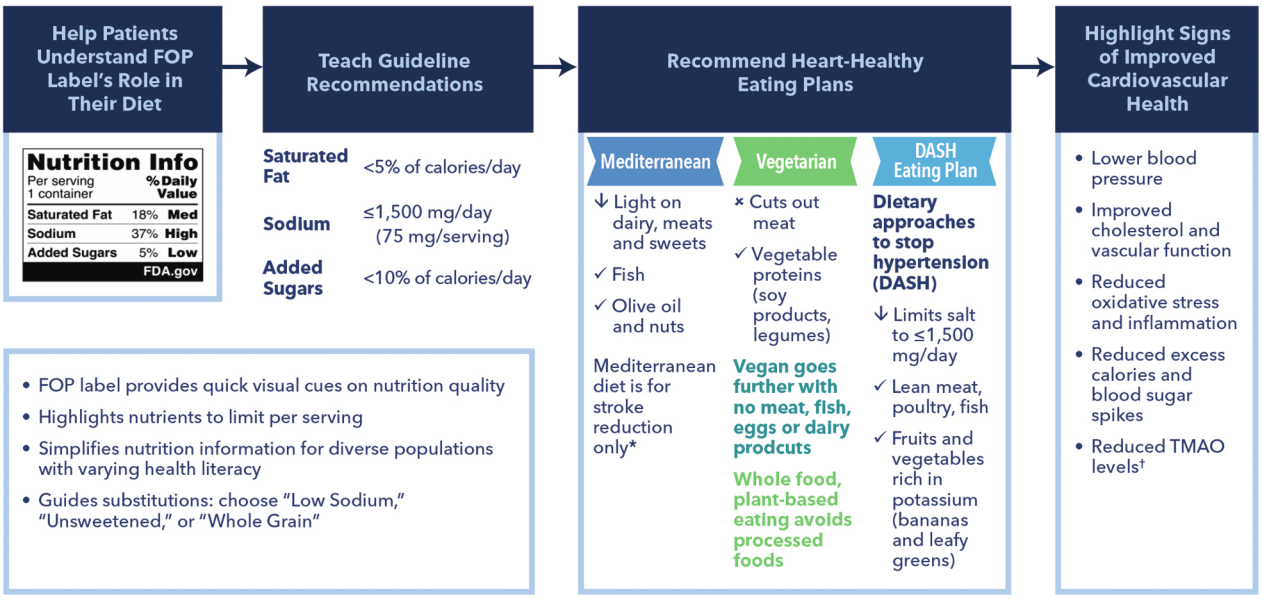
Generally Positive or Negative Nutrient		Nutrient	Guideline Recommendations	Nutrient Content Rating (per 100 g)	Diet Recommendation
Negative (aim for **LOW** content on label)	(FDA-Proposed for Front-of-Package Label)	**Saturated fat**	■ <5%-6% of total daily calories for individuals at risk of CVD ■ <10% for the general population	■ Low: ≤1.5 g ■ Med: 1.6-4.9 g ■ High: ≥5 g	Recommend ≤5% DV (~120 calories in a 2,000-calorie diet); avoid red meat, full-fat dairy, tropical oils
		Sodium	■ ≤1,500 mg/day for individuals with hypertension or elevated CVD risk ■ ≤2,300 mg/day for the general population	■ Low: ≤120 mg ■ Med: 121-599 mg ■ High: ≥600 mg	Guide patients to ≤1,500 mg/day; <500 mg/meal ideal; avoid canned soup, processed meats, bread
		Added sugars (Listed under total carbohydrates) **Nutrition Info** Per serving 1 container — % Daily Value Saturated Fat 18% Med Sodium 37% High Added Sugars 5% Low FDA.gov	■ <5%-6% of total daily calories for Individuals at risk of CVD ■ <7.5% of total daily calories ■ ≤25 g (6 tsp) for women, ≤36 g (9 tsp) for men	■ Low: ≤5 g ■ Med: 5-22.5 g ■ High: >22.5 g	Avoid >5 g per serving; eliminate sugary drinks in at-risk patients; avoid sugar-sweetened beverages, flavored yogurts
		Cholesterol	■ <200 mg/day ■ As low as possible	Not rated	Limit to <200 mg/day for high-risk patients; avoid organ meats, egg yolks
		***Trans* fats**	■ 0 g/day	Any amount = high	Avoid completely; educate on hidden *trans* fats in ingredients; avoid fried food, shelf-stable baked goods
Positive (aim for **HIGH** content on label)		**Dietary fiber** (Listed under total carbohydrates)	■ ≥25-30 g/day	■ High: ≥3 g per 100 g (desirable)	Choose products with >20% DV fiber; target 30 g/day; eat whole grains, legumes, and vegetables; carbohydrate/fiber ratio 10:1 preferred.
		Iron, calcium, vitamin D	■ Varies by age/gender	Not typically classified	Encourage 100% DV intake through diet or supplements
		Monounsaturated and polyunsaturated fats	■ 20%-35% of daily calories	■ Low: ≤3 g ■ Med: 3.1-17.4 g ■ High: ≥17.5 g	Emphasize fat type vs quantity—promote unsaturated fats; avoid fried foods, baked goods
		Potassium	■ ≥3,400 mg (men), ≥2,600 mg (women); unless CKD present	Not typically classified	Recommend potassium-rich foods unless contraindicated (CKD); diet rich in fruits, vegetables, legumes
Source-Dependent		**Protein** (animal *vs* vegetable)	■ ~1.0-1.2 g per kg of body weight per day for older patients ■ ~0.8 g per kg of body weight per day for the general population	Not typically classified	Emphasize plant-based proteins (eg, legumes, nuts, seeds, soy products), fish, lean poultry, and low-fat dairy; limit red/processed meats

CKD = chronic kidney disease; CVD = cardiovascular disease; DV = daily value; FDA = U.S. Food and Drug Administration.

4.2.1.2. Traffic Light Approach—"Red, Yellow, and Green" Colors Labeling on Food

One commonly used method for FOP labels is the traffic light approach (Figure 2). This system is globally utilized in countries such as the United Kingdom, Ecuador, and Iran, indicating the intake level suitable for consumers. This approach helps consumers easily determine whether a product contains high, medium, or low amounts of fat, saturated fats, sugars, and sodium.[59] A color-coded approach is thought to assist less health-conscious and nutrition-minded individuals in understanding nutritional values and increasing the reach of nutrition education.[60] Some use this approach by referencing intakes in percentages, helping consumers understand how much of this item fits into the daily recommended diet.[61] Studies have shown that consumers are more likely to identify healthier choices with the traffic light approach when compared with monochromatic labeling systems,

FIGURE 3 Guiding Heart-Healthy Food Choices with FOP Labels



%Daily Value: **Low** ≤ 5%, **High** ≥20%. *Resource: Estruch R, et al. NEJM 2018.[71] †Trimethylamine N-oxide (TMAO) is a gut microbiota-derived metabolite linked with increased risk of cardiovascular disease, as it promotes atherosclerosis and enhances platelet reactivity. Elevated TMAO levels have been associated with higher incidence of heart attack, stroke, and death.[75,76] FOP = front-of-package.

such as percentage-based FOP labeling.[60] A large international survey spanning 12 countries (including Argentina, Australia, Bulgaria, Canada, Denmark, France, Germany, Mexico, Singapore, Spain, United Kingdom, and United States) assessed consumer perceptions of multiple FOP labeling formats. In this study, the multiple traffic light system consistently scored highest across key consumer metrics: likability, trust, understandability, relevance, and preference for mandatory implementation.[2] Although multiple nutrients have been identified by public health agencies as relevant for chronic disease risk, such as saturated fat, sodium, added sugars, fiber, potassium, and vitamin D, the Writing Committee does not propose that all of these simultaneously appear on FOP labels. Rather, the goal is to prioritize a select number (typically 3-5) of critical nutrients associated with population-level health risk, following models adopted in Chile, Mexico, and United Kingdom. Evidence suggests that simpler FOP designs improve consumer understanding and purchasing behavior.

4.2.2. Key Nutritional Elements in FOP Labeling

The nutrients highlighted on the FOP label can vary in highlighting the nutrients to avoid, consume, or combine (Table 3). Government agencies, national and international dietary guidelines, and scientific advisory panels collaborate to determine which nutrients should be emphasized.[62] Commonly, the nutrients recommended for limited consumption are linked with an increased risk of chronic disease. For example, calories, total fat, saturated fat, *trans* fats, cholesterol, sodium, and total or added sugars must be limited to reduce the risk of diet-related chronic diseases, such as diabetes, obesity, and CVD. Dietary guidelines suggest that total fat constitutes ≤35% of daily calorie intake, with saturated fat <10%.[4] These recommendations are often applied to individual food items. Sodium intake is also strongly related to elevated blood pressure and other chronic diseases, such as heart failure, require reduced consumption.[63] FOP labels that indicate sodium content can help patients follow dietary programs like the Dietary Approach to Stop Hypertension diet, which focuses on fruits and vegetables, and restricts both sodium and saturated fat intake.[64]

Nutrients encouraged on FOP labels are typically identified by the Nutrition Facts panel or the Dietary Guidelines for Americans[4] as underconsumed or essential for health. These include fiber, calcium, potassium, magnesium, iron, vitamin A, vitamin C, vitamin D, and vitamin E.[62] These nutrients help reduce the risk of diet-related chronic disease but are unfortunately underutilized by the general population.[65-67]

Well-designed FOP labels, education, and policies can improve public health outcomes.[68] Table 3 provides a

FIGURE 4 Clinician Checklist for Nutrition Counseling

ACTION ITEM	NOTES/TIPS
• **Encourage a plant-forward diet**	Emphasize fruits, vegetables, whole grains, nuts, legumes, and fish
• **Educate on reading front-and back-of-package labels**	Focus on fiber, added sugars, sodium, and saturated fat
• **Emphasize fiber intake**	Aim for 25-30 g/day; choose foods with ≥20% DV per serving
• **Limit sodium intake**	Keep <1,500 mg/day
• **Advise to avoid processed meats & sugary drinks**	Replace with healthier snacks and beverages
• **Discuss hidden *trans* fats**	Avoid items listing "partially hydrogenated oils"
• **Use simple, culturally sensitive language**	Tailor nutrition advice to patient background and preferences
• **Use visual aids**	Tools such as the *Starting the Conversation on Diet* guide and *My Plate Model* (50% fruits/vegetables, 25% grains, 25% protein)

BOP=back-of-package; DV = daily value; FOP=front-of-package.

condensed reference of nutrient targets, interpretive thresholds, and dietary tips aligned with current clinical guidelines recommendations. Refer to Table 1 for each nutritional factor's impact to cardiovascular health.

4.3. Implementing FOP Labeling for Cardiovascular Benefit

FOP labeling presents an opportunity to translate nutrition science into real-world consumer guidance. It provides a rapid, visual cue at the point of purchase, highlighting nutrients most relevant to chronic disease risk: saturated fat, sodium, and added sugars, aligning with recent dietary guidelines (Table 2).

4.3.1. Interpreting FOP Labels with Patients

Clinicians can incorporate FOP label education into routine encounters. For example, using the %Daily Value (%DV) thresholds:

- **Low**: ≤5% DV
- **High**: ≥20% DV

Color-coded schemes (eg, traffic light labels) and summary scores (eg, Nutri-Score) simplify decision-making for patients with limited health literacy.[69] Educating patients to look for low sodium, low added sugar, and high fiber or unsaturated fat content can guide better food choices.[70-72]

4.3.2. Criteria for Heart-Healthy Foods Using FOP Labels

Meta-analyses have identified threshold intakes associated with CVD prevention[73]:

- Fiber: ≥25-30 g/day
- Saturated fat: <5% to 6% of calories (for high-risk individuals)
- Sodium: <1,500 mg/day
- Added sugars: <25 g/day for women, <36 g/day for men
- Potassium: ≥3,400 mg/day (men), ≥2,600 mg/day (women)

Clinicians should guide patients to select foods with favorable FOP labels (eg, "low sodium," "high fiber") and avoid products with warning icons or red markers.

4.3.3. Practical Applications and Considerations

Despite strong support from dietary guidelines, many clinicians receive limited formal training in nutrition.[74] FOP labeling serves as bridge—delivering real-time nutrition education at the point of decision-making.

Incorporating FOP labelling principles into medical education and clinical practice can:

- Reinforce core nutrition concepts
- Facilitate shared decision-making
- Help overcome time and literacy barriers

Figures 3 and 4 provide tools for label interpretation and clinical nutrition counseling.[72-78]

The 2019 ACC/AHA Primary Prevention of CVD Guideline[44] recommends a plant-forward diet high in fruits, vegetables, whole grains, nuts, legumes, and fish with avoidance of processed meats, refined carbohydrates, and *trans* fats[77]; however, physicians themselves often do not adhere to these guidelines[78] and spend <3 minutes on nutrition counseling during a patient visit.[79] FOP labeling offers particular benefit for populations with limited health literacy or time constraints, supporting equitable access to nutrition guidance. Clinicians should tailor messaging to accommodate cultural dietary preferences and socioeconomic barriers to healthy eating.

Physician education should emphasize 2 core principles: 1) the widespread consensus among professional societies that support whole-food, plant-forward dietary patterns (eg, the ACC, American Diabetes Association,[79] American College of Physicians,[80] and Dietary Guidelines for America[4]); and 2) a clear understanding of a healthy diet, including reducing saturated fat, added sugars, and sodium, while increasing intake of fruits, vegetables, legumes, and whole grains.[4] A focus on whole, minimally processed foods is critical to limit the inflammatory and insulin resistance effects of refined products.[81-85]

Clinicians should counsel patients on how to interpret nutrition labels, emphasizing both beneficial and limiting nutrients (**Table 3**). Positive nutrients include fiber, plant-based protein, and key vitamins and minerals. Fiber is particularly important for cardiovascular prevention, yet average intake in the United States (~15-16 g/day) remains below the recommended 25-30 g/day.[86] Protein intake should meet but not exceed needs (~0.8 g/kg body weight/day for adults), reinforcing balance rather than excess (**Table 1**). Essential minerals—iron, calcium, and potassium—should be highlighted, especially given recent European Society of Cardiology guidance supporting potassium-rich foods to help lower blood pressure.[87] Clinicians should also advise patients to limit negative nutrients: saturated fat, cholesterol, added sugars, and sodium. Although industrial *trans* fats are banned in the United States, trace amounts may remain in foods listing "partially hydrogenated oils" and should be avoided.

Effective nutrition counseling requires patience, empathy, and cultural competence. Meeting patients where they are and supporting realistic, incremental changes fosters sustainable improvement. **Figure 4** presents practical actions to guide clinicians in providing effective, culturally sensitive nutrition counseling for cardiovascular health.

Visual tools and aids such as Starting the Conversation on Diet[88] and the MyPlate Model[89] can facilitate productive discussions with patients to help plan balanced meals (see online Supplemental Appendix). Clinicians should also discuss sustainability and food safety concerns, including the presence of microplastics in seafood.[90]

FOP labeling provides a pragmatic strategy to operationalize dietary recommendations in clinical practice. By emphasizing nutrients most relevant to cardiovascular risk—saturated fat, sodium, and added sugars, and facilitating rapid comparison of food products, FOP labels enhance the translation of evidence-based nutrition science into everyday decisions. When coupled with clinician education and culturally sensitive counseling, FOP labeling helps overcome barriers related to health literacy, culture, and socioeconomic constraints. Integrating these approaches into practice empowers both clinicians and patients to make sustainable, informed food choices, ultimately improving cardiovascular outcomes at the individual and population levels.

4.4. Conclusions/Future Directions

Improving cardiovascular health through better nutrition is achievable through policy, education, and clinical practice. FOP labeling aligns with established nutrition science and offers a scalable tool for empowering consumers. As the FDA moves toward implementation, clinician engagement is essential. This CCG supports evidence-based FOP labeling as a catalyst for improving diet quality, reducing CVD risk, and advancing public health equity.

PRESIDENT AND STAFF

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KEY WORDS ACC Concise Clinical Guidance, cardiovascular health, consumer behavior, dietary guidelines, food label, front-of-package, nutrition policy, traffic light labeling

APPENDIX 1. AUTHOR RELATIONSHIPS WITH INDUSTRY AND OTHER ENTITIES (RELEVANT)

Nutrition and Front-of-Package Food Labeling as a Catalyst for Cardiovascular Health: 2025 Concise Clinical Guidance

Committee Member	Employment	Consultant	Speakers Bureau	Ownership/ Partnership/ Principal	Personal Research	Institutional, Organizational, or Other Financial Benefit	Expert Witness
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ACC = American College of Cardiology.

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