

## Food Groups—Trends over Time

The U.S. population has made few dietary changes over the time period from 2001-04 to 2007-10:

- Fruit intake—low but stable
- Vegetable intake has declined
- Whole grain intake increased, but still low, and refined grain intake decreased, but still high.
- Dairy intake—low but stable for most groups.
- Added sugars intake has decreased but still exceeds the limit in the USDA food patterns.

Food and Nutrient Intakes, and Health: Current Status and Trends

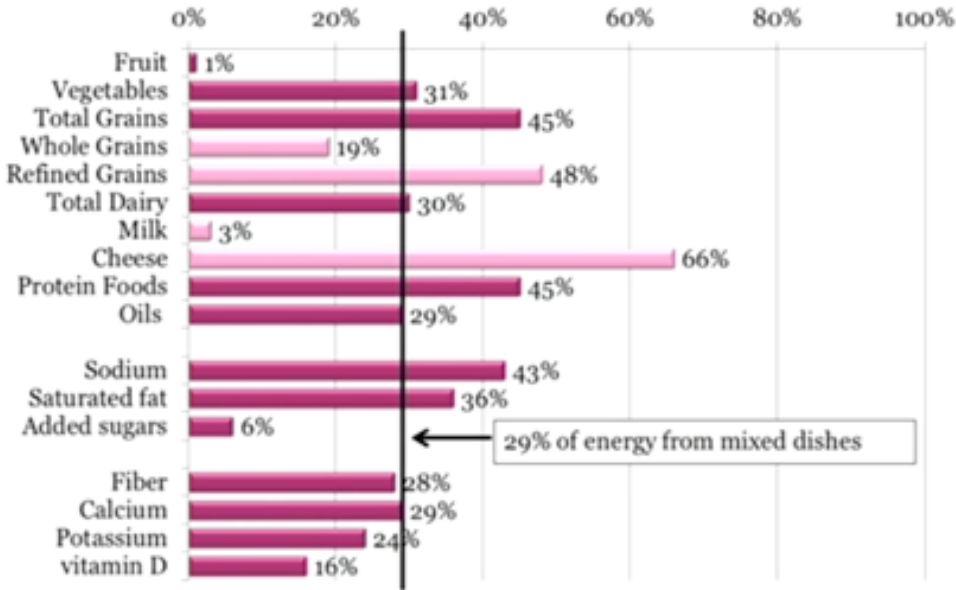
## Food Categories—sources of energy and food groups

Food categories identify and group foods as consumed. Nine major categories and 32 subcategories analyzed.

- Mixed dishes (e.g., sandwiches, burgers, pizza, pasta/rice/meat/poultry mixed dishes, stir-fries, soups)
  - Major contributor to 3 food groups—grains, vegetables, and protein foods.
  - Contributes heavily to intake of energy, saturated fat, and sodium.
- Fruit and fluid milk intake seldom consumed as part of mixed dishes.
- Beverages contribute 19% of total energy intake.
  - Major sources are sugar-sweetened beverages, milk and milk drinks, and 100% fruit juices.

Food and Nutrient Intakes, and Health: Current Status and Trends

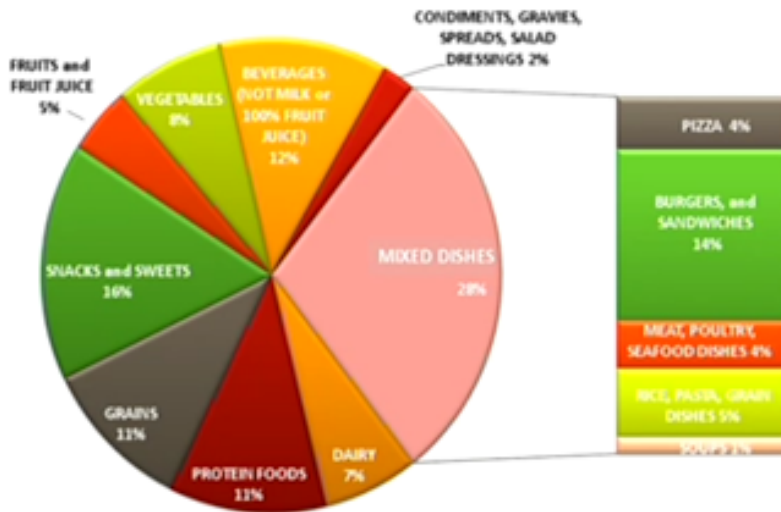
### Percent of Total Intake from Mixed Dishes



What We Eat in America, NHANES 2009-10

Food and Nutrient Intakes, and Health: Current Status and Trends

### Food sources of energy: Percent from major food categories



What We Eat in America, NHANES 2009-10

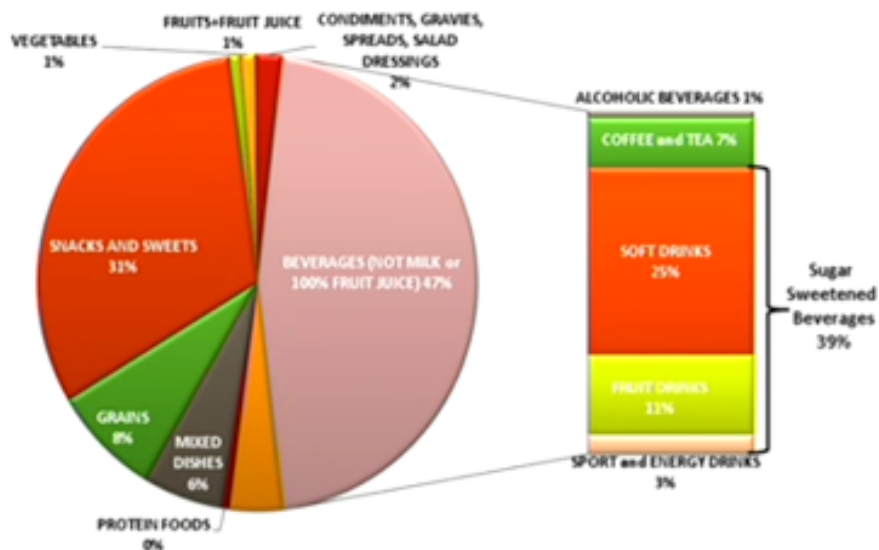
Food and Nutrient Intakes, and Health: Current Status and Trends

## Food Categories—sources of sodium, saturated fat, and added sugars

- Mixed dishes are the largest contributor to intake of sodium and saturated fat.
  - Within mixed dishes, the sub-category of burgers and sandwiches is the largest contributor for both.
- Sodium is ubiquitous in the food supply and many food categories contribute to intake.
- Snacks and sweets are a major contributor to added sugars and saturated fat intake.
- Beverages supply almost half of added sugars intake.

Food and Nutrient Intakes, and Health: Current Status and Trends

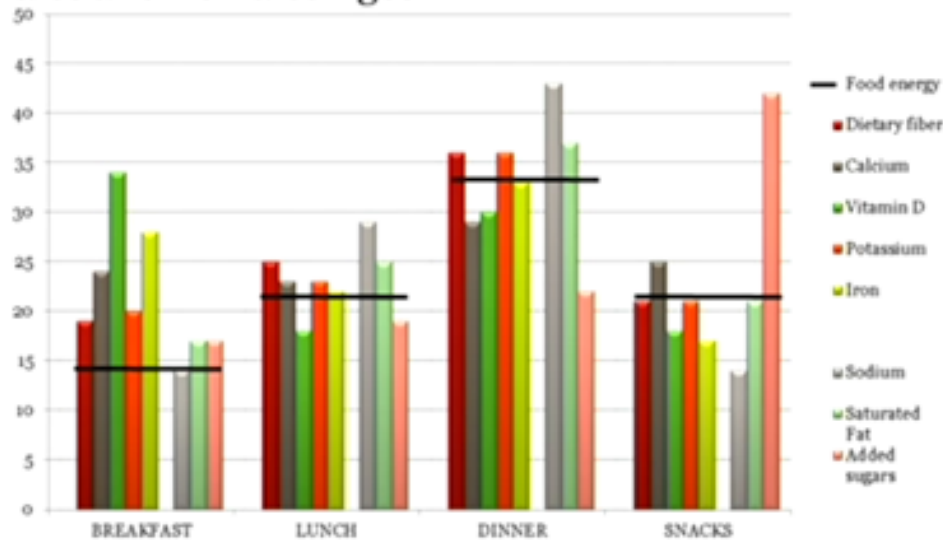
### Food sources of added sugars: Percent from major food categories



What We Eat in America, NHANES 2009-10

Food and Nutrient Intakes, and Health: Current Status and Trends

## Percent of Total Daily Intake from each Eating Occasion Males and Females Ages 2+



What We Eat in America NHANES 2009-10

Food and Nutrient Intakes, and Health: Current Status and Trends

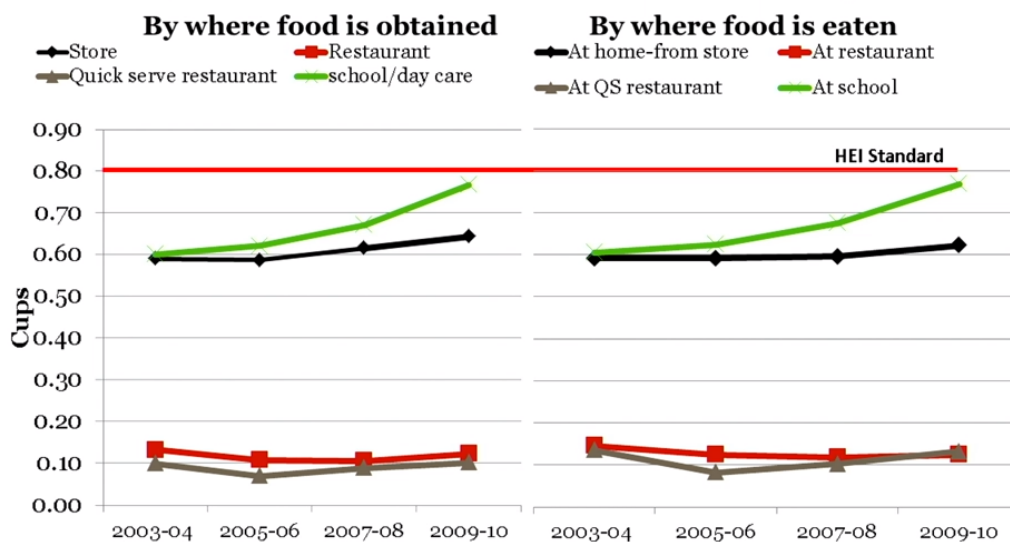
## Eating Behaviors—Location of Purchase

- About two-thirds of the calories consumed by the U.S. population are purchased at a store, such as a grocery store or supermarket, and consumed in the home.
- The percent of calories eaten away from home has remained about the same since 2003-2004.
- Food group content and nutrient quality vary by where food is obtained.
- No matter where the food is obtained, diet quality of the U.S. population is low in fruit, vegetables, dairy, whole grains, and high in sodium, saturated fats, refined grains, solid fats, and added sugars.

Food and Nutrient Intakes, and Health: Current Status and Trends

## Fruit Group Density

Cups per 1000 kcal by where obtained and eating location

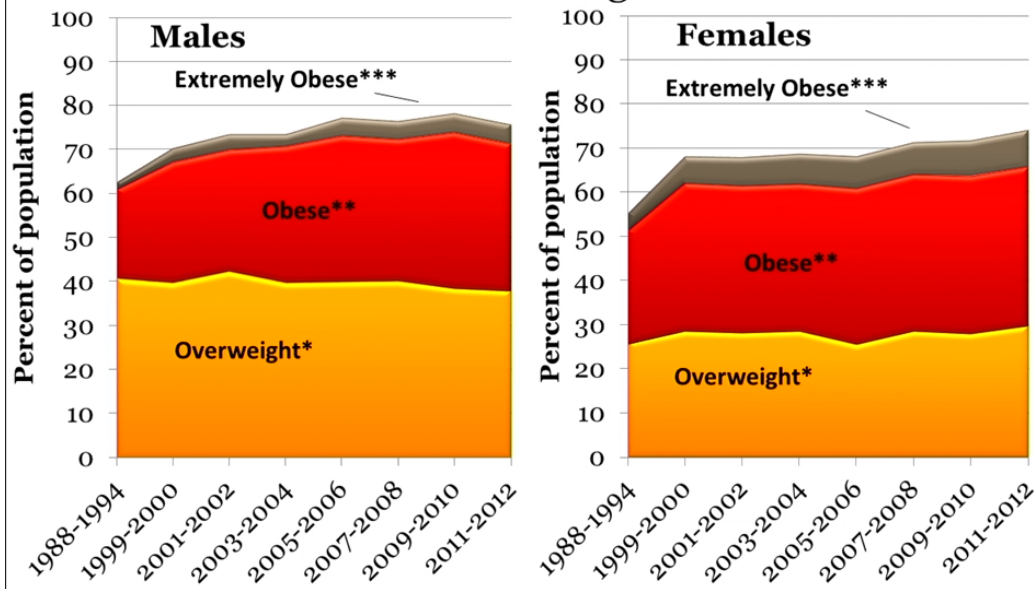


What We Eat in America, NHANES 2003-04, 2005-06, 2007-08, 2009-10

## Health Conditions—Overweight and Obesity

- Current rates of overweight and obesity are extremely high among children, adolescents, and adults. These high rates have persisted for more than 25 years.
  - About 65% of adult females and 70% of adult males are overweight or obese.
  - Rates of overweight and obesity are highest in adults 40+ years, and vary by race/ethnicity.
- Abdominal obesity is present in U.S. adults of all ages, increases with age, and varies by sex and race/ethnicity.
- Nearly one in three youth, ages 2 to 19 years, is now overweight or obese and these rates vary by age and ethnicity.

## Trends in Overweight and Obesity: 2015 DGAC: MEETING 7 Adult Males and Females ages 20+



NHANES 1988-94, 1999-02 through 2011-12

\*BMI =25 to <30 \*\*BMI = 30 to <40 \*\*\*BMI = 40 and over

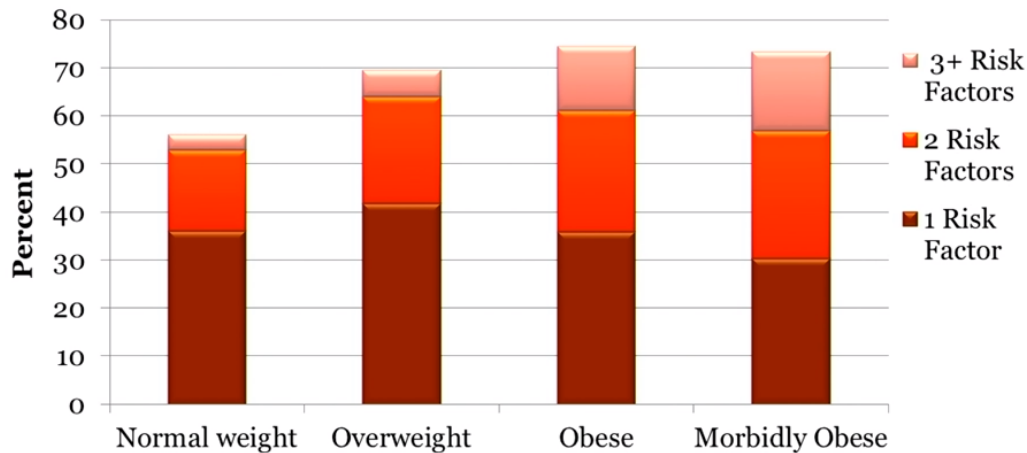
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## Health Conditions—Risk Factors

- At least one cardio-metabolic risk factor in
  - 56% of adults who are normal weight,
  - 70% of adults who are overweight,
  - 75% of those who are obese.
- Rates of elevated blood pressure, dyslipidemia, and diabetes are highest in adults with elevated abdominal obesity.
- 90% of children with type 2 diabetes are overweight or obese.
  - 93% of children with type 2 diabetes are 12 to 19 years old.

Food and Nutrient Intakes, and Health: Current Status and Trends

## Prevalence of Number of CVD Risk Factors by Weight Category, among Adults 18 Years and Older



Risk factors included: total diabetes; total hypertension; total dyslipidemia; and self-reported smoking

Saydah et al., Obesity, 2014 (NHANES 2007 -2010)

### Food and Nutrient Intakes, and Health: Current Status and Trends

## Health Conditions

- At all ages, rates of chronic disease are linked to overweight and obesity.
- Adults have high rates of high blood pressure, CVD, diabetes, and various forms of cancer.
- Children and adolescents also have nutrition-related chronic diseases, including borderline high blood pressure and type 2 diabetes.
- Prevalence of osteoporosis and of low bone mass increases with age, particularly in post-menopausal women.
- Nutrition-related neurological and psychological conditions are a growing concern.
- Congenital anomalies are a relatively rare, but important pregnancy outcome.

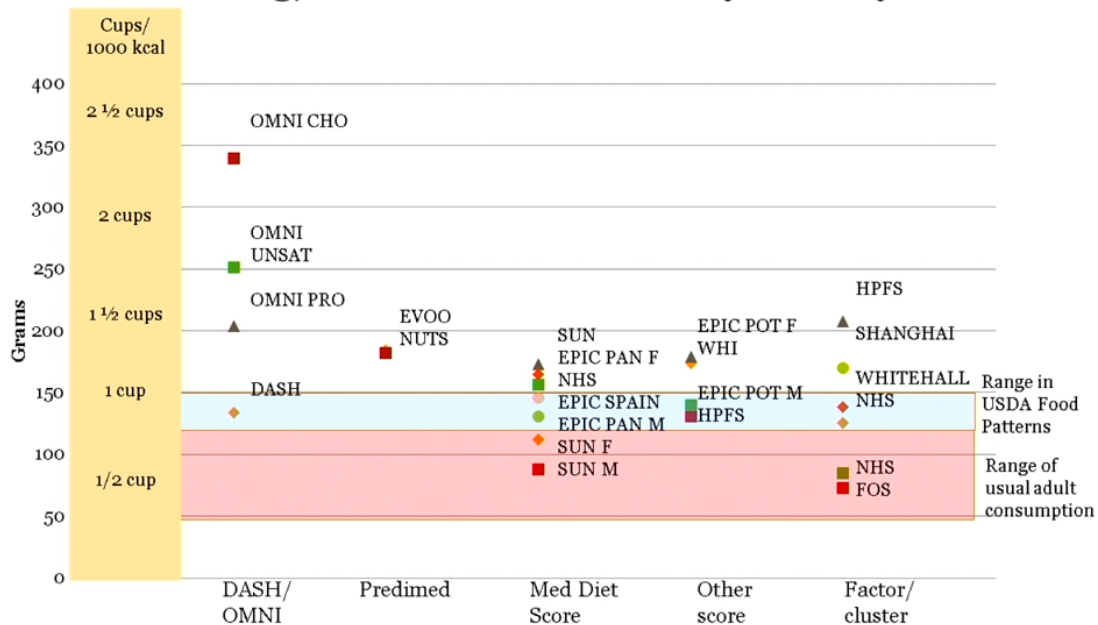
### Food and Nutrient Intakes, and Health: Current Status and Trends

# Dietary Patterns Composition

- Dietary patterns observed to have health benefits in intervention and cohort studies had certain common elements.
- A healthful diet can be achieved by following a variety of dietary patterns.
- In many cases, the ranges of intake in dietary patterns with positive health benefits are close to those recommended by the USDA Food Patterns.
- The data from the intervention trials and the cohort studies examined provide empirical data that the USDA Food Patterns provide an evidence-based guide to healthy patterns of food consumption.

Food and Nutrient Intakes, and Health: Current Status and Trends

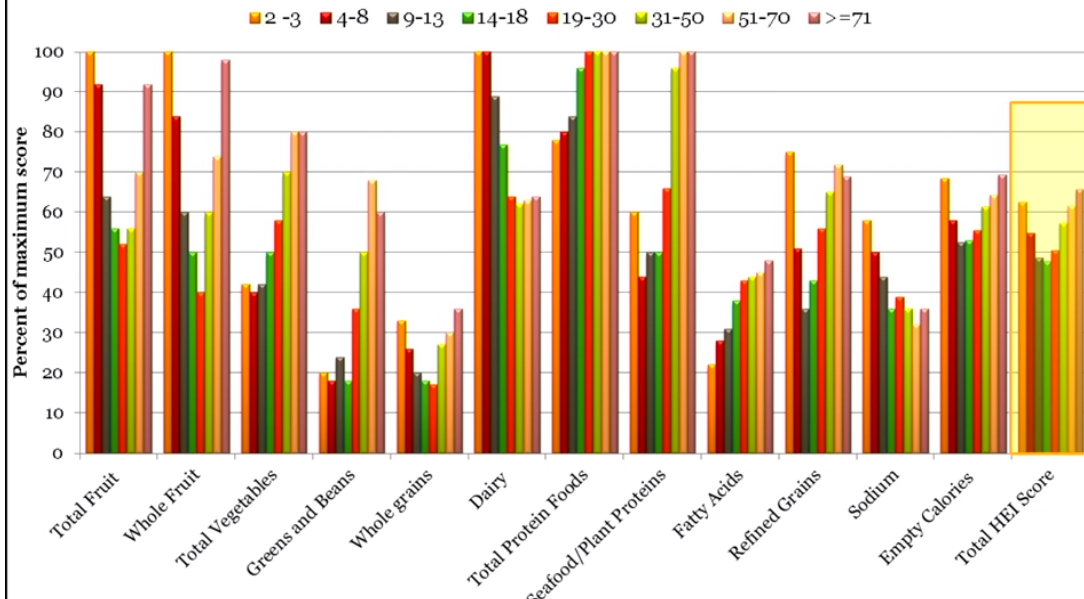
## Fruit intake (g/1000 kcal) for Healthy Dietary Patterns



Food and Nutrient Intakes, and Health: Current Status and Trends



## Average HEI-2010 scores for Americans by age group



What We Eat in America, NHANES 2009-10

Food and Nutrient Intakes, and Health: Current Status and Trends

## Dietary Patterns—Intakes vs. Recommendations

- Average HEI score in the U.S. population is 57 points out of a total of 100 points.
- The best component scores were for: total protein foods, seafood and plant proteins, dairy.
- The poorest component scores were for: whole grains, sodium, fatty acid ratio, greens and beans, and empty calories.
- Best HEI scores: Young children ages 2 -3 years, middle aged, and older adults.
- Poorest HEI scores: Preadolescents and adolescents.

Food and Nutrient Intakes, and Health: Current Status and Trends

## Dietary Patterns—USDA Food Patterns

- Food Pattern Modeling demonstrates that healthy eating patterns can be achieved with:
  - Healthy U.S.-style Pattern
  - Healthy Mediterranean-style Pattern
  - Healthy Vegetarian Pattern
- Although some differences exist across the three eating patterns, comparable amounts of nutrients can be obtained by consuming nutrient-dense foods while maintaining energy balance.

Food and Nutrient Intakes, and Health: Current Status and Trends

## Chapter Summary

- The US population has low intakes of certain key nutrients – vitamin D, potassium, fiber, calcium, and for females also iron. These low intakes are a public health concern because inadequate intakes are linked to health problems.
- The US population overconsumes sodium and saturated fat. Excess intakes of these nutrients are also linked to health problems.
- Many of the food groups that are good sources of underconsumed nutrients are consumed in low amounts by the U.S. population.
- Many of the food groups and food categories that have high levels of sodium, saturated fat, and added sugars are consumed in high amounts.

Food and Nutrient Intakes, and Health: Current Status and Trends

## Chapter Summary

The US population purchases and consumes food in a variety of locations.

- The diet quality is low regardless of where food is purchased or consumed.

Rates of diet-related chronic conditions are high.

- Obesity, CVD, CVD risk factors, diabetes, cancer, and osteoporosis are all very common. Improving diet quality will help reduce risk of these diseases with major morbidity, mortality and health care expenditures.

Food and Nutrient Intakes, and Health: Current Status and Trends

## Research Recommendations

- Nutrition Surveillance, NHANES/WWEIA needs more respondents from a variety of racial/ethnic minority groups, more non-U.S. born residents and increase the number of pregnant women and older Americans - all of these groups are currently under-represented.
- Research is needed to understand the driving forces behind the decline in diet quality that begins in mid childhood, through adolescence, through adulthood.
- Improvements are needed in the quantity and quality of food composition databases.

## Research Recommendations

- Investigate the validity, reliability and reproducibility of new biomarkers of dietary intake and nutritional status.
- Evaluate the effects of fortification and supplement use on consumer behavior related to intakes of nutrients of public health concern.
- Understand the health effects from high-dose dietary supplements.
- Develop standardized research definitions for meals and snacks.
- Understand better the food landscape – where foods are purchased and consumed and how the food environment effects nutritional status.
- Understand better the concept of dietary patterns and develop standardized methods for dietary patterns research.

Food and Nutrient Intakes, and Health: Current Status and Trends

## Special Thanks

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Food and Nutrient Intakes, and Health: Current Status and Trends

## Introduction

- A major goal of the DGAC was to describe the common characteristics of a healthy dietary pattern.
- Committee focused on research examining dietary patterns because the totality of diet may have synergistic and cumulative effects on health and disease.
- In this chapter, the Committee focused on providing a qualitative description of healthy dietary patterns based on evidence from epidemiological studies and intervention trials for several health outcomes.

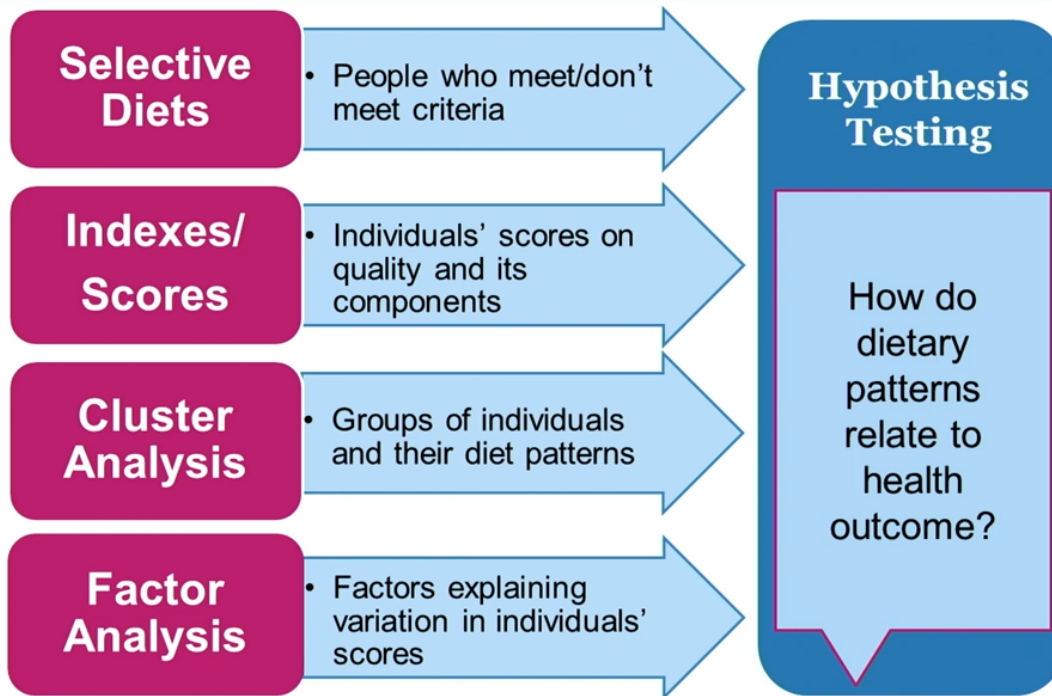
Dietary Patterns, Foods and Nutrients, and Health Outcomes

## Methodology

- Dietary patterns were defined as:
  - *the quantities, proportions, variety or combinations of different foods and beverages in diets, and the frequency with which they are habitually consumed.*

Dietary Patterns, Foods and Nutrients, and Health Outcomes

# Dietary Pattern Methodologies



Slide presented by Susan Krebs-Smith at the Second DGAC Public Meeting

2015 DGAC: MEETING 7

## Methodology

- When reviewing the evidence, the Committee attempted to adhere to the language used by the study authors in describing food groupings. There was some variability across studies in defining the food groupings.
  - Example: “Vegetables” seemed to most often exclude potatoes, but some studies included potatoes, yet they rarely provided information on how the potatoes were consumed (e.g., fried versus baked).

## Methodology

- Since most studies compared highest versus lowest intake levels, the Committee presented its conclusions with relative terminology (e.g., “higher” and “lower” in a certain component).

Dietary Patterns, Foods and Nutrients, and Health Outcomes

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## Topics and Methodology

- Dietary Patterns and:
    1. Cardiovascular Disease
    2. Body Weight
    3. Type 2 Diabetes
    4. Cancer
    5. Congenital Anomalies
    6. Neurological and Psychological Illnesses
    7. Bone Health
- Existing Reports
- Original NEL Systematic Reviews

Dietary Patterns, Foods and Nutrients, and Health Outcomes

## Major Conclusions

- Strong evidence:
  - CVD; weight loss among overweight and obese adults
- Moderate evidence:
  - T2D; colorectal cancer; postmenopausal breast cancer; and body weight – weight gain or incidence of overweight and obesity (adults)
- Limited evidence:
  - Premenopausal breast cancer; lung cancer; neural tube defects; depression (adults); age-related cognitive impairment; bone health (adults); and body weight (children)
- Grade not assignable:
  - Prostate cancer; depression (post-partum women; children); congenital heart defects; cleft lip/palate; and bone health (children)

Dietary Patterns, Foods and Nutrients, and Health Outcomes

## Major Conclusions

- Numerous dietary patterns were identified, with the most common ones defined using indices or scores such as the Healthy Eating Index (HEI)-2010, the Alternate HEI-2010, or various Mediterranean-style dietary patterns, the DASH pattern, vegetarian patterns, and data-driven approaches.
- The Committee's examination of the association between dietary patterns and various health outcomes revealed remarkable consistency in the findings.

Dietary Patterns, Foods and Nutrients, and Health Outcomes



## Major Conclusions

- Common characteristics of dietary patterns associated with positive health outcomes include:
  - higher intake of vegetables, fruits, whole grains, low-fat dairy, fish/seafood, legumes, lean meat, and nuts;
  - moderate intake of alcohol;
  - lower consumption of red and processed meat, and
  - low intake of sugar-sweetened foods and beverages, and refined grains.

Dietary Patterns, Foods and Nutrients, and Health Outcomes

## Recommendations

- The U.S. population should consume dietary patterns that are:
  - rich in vegetables, fruits, whole grains, fish/seafood, legumes, and nuts;
  - moderate in dairy products (e.g. low and non-fat dairy) and alcohol; and
  - lower in red and processed meat, and
  - low in sugar-sweetened foods and beverages and refined grains.

Dietary Patterns, Foods and Nutrients, and Health Outcomes

## Recommendations

- These dietary patterns can be achieved in many ways and should be tailored to the individual's biological and medical needs as well as socio-cultural preferences.
- The dietary pattern characteristics being recommended by the 2015 DGAC reaffirms the dietary pattern characteristics recommended by the 2010 DGAC.
- The dietary pattern characteristics discussed in the chapter informed and is complementary to the quantitative description of dietary patterns provided in ***Part D. Chapter 1: Food and Nutrient Intakes, and Health: Current Status and Trends.***

Dietary Patterns, Foods and Nutrients, and Health Outcomes

2015 DGAC: MEETING 7

## Recommendations

- Very little evidence examined dietary patterns during childhood.
- The healthy dietary pattern components discussed also apply to children and are reaffirmed with the USDA Food Patterns, which are designed to consider nutrient needs across the lifespan.

Dietary Patterns, Foods and Nutrients, and Health Outcomes

## Recommendations: Alcohol

- The Committee confirmed several conclusions of the 2010 DGAC, including that moderate alcohol intake can be a component of a healthy dietary pattern, and that if alcohol is consumed, it should be consumed in moderation, and only by adults.
- However, it is not recommended that anyone begin drinking or drink more frequently on the basis of potential health benefits.
- In addition, there are many circumstances in which people should not drink alcohol.
- Because of the substantial evidence clearly demonstrating the health benefits of breastfeeding, occasionally consuming an alcoholic drink does not warrant stopping breastfeeding. However, women who are breastfeeding should be very cautious about drinking alcohol, if they choose to drink at all.

## Recommendations

- A multi-level process at individual and population levels is required to help achieve a healthy dietary pattern and other lifestyle behaviors so as to reduce chronic disease and improve overall well-being.
- The Committee recommends the development and implementation of policies, programs and services that facilitate the improvement in eating behaviors consistent with healthy dietary patterns in various settings, including preventive services as well as those that reach populations in settings of influence such as preschool and school settings and workplaces, and where they purchase and consume food.

# Research Recommendations

1. Conduct additional dietary patterns research for other health outcomes to strengthen the evidence beyond CVD and body weight in populations of various ethnic backgrounds and life course stages in order for future DGACs to draw stronger conclusions.
2. Improve the understanding of how to more precisely characterize dietary patterns by their food constituents and the implications of the food constituents on nutrient adequacy through the use of Food Pattern Modeling.
3. Examine the long-term cardio-metabolic effects of the various dietary patterns identified in the AHA/ACC/TOS Guidelines for the Management of Overweight and Obesity in Adults that are capable of resulting in short-term weight loss.

## Science Base Chapter:

# *Individual Diet and Physical Activity Behavior Change*

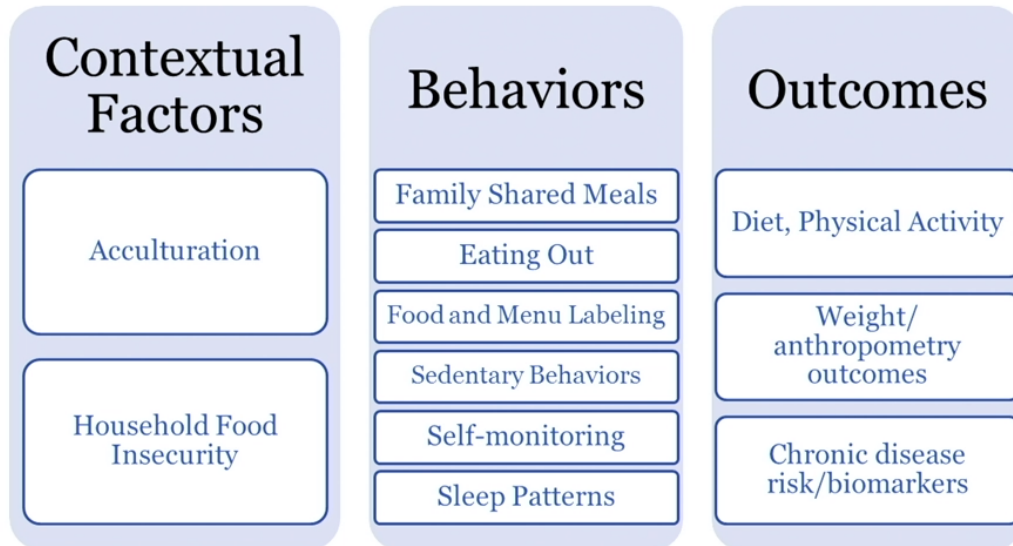
Subcommittee 3

2015 DGAC: MEETING 7

## Introduction

- Focus on individual behavior change (“what works”)
- Topics include behaviors and contextual factors influencing an individual’s ability to make behavior changes
- Key strategy– self-monitoring
- Emerging topics of interest – sleep patterns, mobile health

## Scope



Individual Diet and Physical Activity Behavior Change

## Methodology

- Most questions addressed using NEL Systematic Review
- Eating Out
  - *Update to 2010 DGAC's NEL Systematic Review*
- Sedentary Behavior, Including Screen Time
  - *Community Preventive Services Task Force Obesity Prevention and Control: Behavioral Interventions that Aim to Reduce Recreational Sedentary Screen Time*

Individual Diet and Physical Activity Behavior Change

## Topics Addressed

Eating Out  
Family Shared Meals  
Sedentary Behavior, Including Screen Time  
Self-Monitoring  
Food and Menu Labeling  
Household Food Insecurity (HFI)  
Acculturation

Individual Diet and Physical Activity Behavior Change

## Eating Out *Conclusions*

- Among adults, moderate evidence from prospective cohort studies in populations ages 40 years or younger at baseline indicates higher frequency of fast food consumption is associated with higher body weight, body mass index (BMI), and risk for obesity.
  - **DGAC Grade: Moderate**
- Among children, limited evidence from prospective cohort studies in populations ages 8 to 16 years at baseline suggests that higher frequency of fast food consumption is associated with increased adiposity, BMI z-score, or risk of obesity during childhood, adolescence, and during the transition from adolescence into adulthood.
  - **DGAC Grade: Limited**

Individual Diet and Physical Activity Behavior Change

## Family Shared Meals *Research Recommendations*

1. Conduct studies in diverse populations that assess not only frequency of family shared meals, but also quality of family shared meals.
2. Conduct RCTs to isolate the effect of interventions that increase the frequency of family meals from other health and parenting behaviors that may be associated with dietary intake and weight status.

Individual Diet and Physical Activity Behavior Change

## Sedentary Behavior *Conclusions*

- Moderate and consistent evidence from prospective studies that followed cohorts of youth into adulthood supports that adults have a higher body weight and incidence of overweight and obesity when the amount of TV viewing is higher in childhood and adolescence.
  - **DGAC Grade: Moderate**
- Moderate evidence from prospective studies suggests no association between sedentary behavior in adulthood and change in body weight, body composition, or incidence of overweight or obesity in adulthood.
  - **DGAC Grade: Moderate**
- The DGAC concurs with the Community Guide, which found strong evidence that behavioral interventions are effective in reducing recreational sedentary screen time among children ages 13 years and younger. Limited evidence was available to assess the effectiveness of these interventions among adults and no evidence was available for adolescents ages 14 years and older.
  - **DGAC Grade: Strong**

Individual Diet and Physical Activity Behavior Change



## Sedentary Behavior *Research Recommendations*

1. Develop improved and better standardized and validated tools to assess sedentary behaviors and activities that children, adolescents, and adults regularly engage in.
2. Conduct prospective research to examine the effects and mechanisms of the quantity, patterns, and changes of sedentary behaviors on diet quality, energy balance, body weight, adiposity, and health across the life span in groups within the U.S. population with diverse personal, cultural, economic, and geographic characteristics.

Individual Diet and Physical Activity Behavior Change

2015 DGAC: MEETING 7

## Self-Monitoring *Conclusions*

- Moderate evidence, primarily in overweight adult women living in the United States, indicates that self-monitoring of diet, weight, or both, in the context of a behavioral weight management intervention, incorporating goal setting and performance feedback, generally improves weight-loss outcomes.
  - **DGAC Grade: Moderate**
- Limited but consistent evidence suggests that higher frequency or greater adherence to self-monitoring of diet, weight, or both, in the context of a behavioral weight management program, is associated with better weight-loss outcomes.
  - **DGAC Grade: Limited**

Individual Diet and Physical Activity Behavior Change

## Self-Monitoring *Research Recommendations*

1. Evaluate the impact of different types, modalities, and frequencies of self-monitoring on body weight outcomes during both the weight loss intervention and maintenance periods.
2. Evaluate the comparative effectiveness of performance feedback from self-monitoring delivered through automated systems versus personal interactions with a counselor.
3. Test the effectiveness of self-monitoring on weight outcomes in understudied groups, including ethnic/racial minorities, low education, low literacy, and low numeracy populations, males, and subjects younger than age 30 years and older than age 60 years.
4. Conduct RCTs based on sound behavioral change theories that incorporate self-monitoring, employ heterogeneous populations, and are powered for small effect sizes and high attrition rates, to test the short- (e.g., 3 months) and long-term (e.g., 12 months) effects of mobile health technologies on dietary and weight outcomes.

Individual Diet and Physical Activity Behavior Change

## Food and Menu Labeling *Conclusions*

- Limited and inconsistent evidence exists to support an association between menu calorie labels and food selection or consumption.  
– **DGAC Grade: Limited**

Note: Conclusion based on RCT's conducted under laboratory simulation conditions of unknown external validity to "real world" conditions.

Individual Diet and Physical Activity Behavior Change

## Household Food Insecurity

### *Conclusions*

- Limited and inconsistent evidence from studies conducted in adults and children ages 3 to 6 years suggests that a positive association may exist between persistent and/or progressing household food insecurity and higher body weight in older adults, pregnant women, and young children. No studies reported a relationship with lower body weight.
  - **DGAC Grade: Limited**

Individual Diet and Physical Activity Behavior Change

## Household Food Insecurity

### *Research Recommendations*

1. Conduct prospective cohort studies that cover a wide age range during childhood and adolescence and include children, families, and ethnically/racially diverse populations and describe potential effect modifiers such as gender, ethnic and cultural factors, family structure, area of residence (i.e., urban vs. rural), employment, and use of social support systems while examining the relationship between household food insecurity, dietary intake, and body weight.
2. Standardize research methodology, including developing a consistent approach to measuring food insecurity and use of measured height and weight to reduce the likelihood of responder bias.

Individual Diet and Physical Activity Behavior Change

## Chapter Summary

- Motivating and facilitating individual behavior change is necessary
- Promising behavioral strategies:
  - Reducing screen time
  - Reducing the frequency of eating out at fast-food restaurants
  - Increasing frequency of family shared meals
  - Self-monitoring of diet and physical activity behavior
  - Effective food labeling to target healthier food choices

Individual Diet and Physical Activity Behavior Change

2015 DGAC: MEETING 7

## Chapter Summary – Action Items

1. Continuous support of Federal programs to help alleviate the consequences of household food insecurity
2. Food and nutrition assistance programs take into account the risk that immigrants have of giving up their healthier dietary habits soon after arriving in the United States
3. Efforts to provide all individuals living in the United States with the environments, knowledge, and tools needed to implement effective individual- or family-level behavioral change strategies to improve the quality of their diets and reduce sedentary behaviors

# Subcommittee 4 Membership

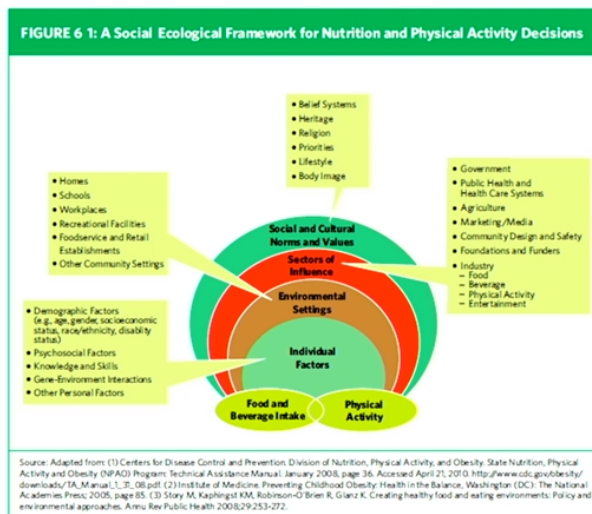
Mary Story  
SC 4 Chair

Barbara Millen  
DGAC Chair

Lucile Adams-Campbell  
Wayne Campbell  
Mim Nelson

2015 DGAC: MEETING 7

## Introduction 2010 Dietary Guidelines for Americans



Recognized the  
role of the food  
environment in  
promoting or  
hindering healthy  
eating

# 2015 Dietary Guidelines Advisory Committee

## Food Environments

### *Physical environment*

- Key settings – neighborhood and community food access, early care and education, schools, worksites
- Understand and assess the role of food environment in promoting or hindering healthy eating in various settings.
- Identify the most effective evidence-based diet-related programs, practices, environmental and policy approaches (“what works”) to improve health and reduce disparities.

Food Environment and Settings

2015 DGAC: MEETING 7

## Food Access Questions and Methodology

What is the relationship between neighborhood and community access to food retail settings and:

1. Individuals’ dietary intake and quality?
2. Weight status?

### **Approach:**

NEL (Nutrition Evidence Library) systematic review

Food Environment and Settings

## Early Care and Education Question and Methodology

What is the impact of obesity prevention approaches in early care and education (ECE) programs on the weight status of children ages two to five years?

### **Approach:**

- Existing systematic review *plus*
- NEL systematic review to update the literature

Food Environment and Settings

## Early Care and Education Question and Methodology

What is the impact of obesity prevention approaches in early care and education (ECE) programs on the weight status of children ages two to five years?

### **Approach:**

- Existing systematic review *plus*
- NEL systematic review to update the literature

Food Environment and Settings

## Schools Questions and Methodology

What is the impact of school-based approaches on:

1. The dietary intake, quality, behaviors and/or preferences of school-aged children?
2. Weight status of school-aged children?

What is the impact of school-based policies on:

3. The dietary intake, quality, behaviors and/or preferences of school-aged children?
4. The weight status of school-aged children?

**Approach:** Existing Systematic Reviews

Food Environment and Settings

## Worksite Questions and Methodology

What is the impact of worksite-based approaches on:

1. The dietary intake, quality, behavior of employees?
2. Weight status of employees?

What is the impact of worksite-based policies on:

1. The dietary intake, quality and behavior of employees?
2. Weight status of employees?

**Approach:** Existing Systematic Reviews

Food Environment and Settings



## Major Conclusions and Recommendations

### The DGAC found:

- Strong to moderate evidence that school and worksite policies are associated with improved dietary intake;
- Moderate evidence that multi-component school-based and worksite approaches increase vegetable and fruit consumption; and
- Moderate and promising evidence that multi-component obesity prevention approaches implemented in child care settings, schools and worksite improve weight-related outcomes.

Food Environment and Settings

## Major Conclusions and Recommendations

- For the community food access questions addressing the relationship between food retail settings and dietary intake and weight status the evidence was too limited or insufficient to assign grades.
- To reduce the disparity gaps that currently exist in low resource and underserved communities, more solutions-oriented initiatives and policies are needed on ways to increase access and procurement of healthy foods, and also reduce access to nutrient-poor foods.

Food Environment and Settings

## Chapter Summary

- Environmental and policy approaches are needed to complement individual-based efforts to improve diet quality and reduce obesity
- Approaches have the potential for broad and sustained impact at the population level
- One striking aspect of the Committee's findings was the effectiveness of multi-component interventions over single component interventions

## Chapter Summary

Examples of strategies identified in key settings – early care and education, schools, and worksites

- For obesity prevention, effective multi-component interventions incorporated both nutrition and physical activity using a variety of strategies, including:
  - Environmental policies to improve the availability and provision of healthy foods;
  - Increasing opportunities for physical activity;
  - Increased parent engagement; and
  - Educational approaches (e.g., school curriculum).
- For multi-component dietary interventions effective strategies include:
  - Nutrition education;
  - Parent engagement; and
  - Environmental policies (e.g., nutrition standards, food service changes, point-of-purchase information)

Food Environment and Settings

## Chapter Summary

- Evidence can be used to inform and guide new multi-component individual and environmental and policy approaches in settings where people eat and procure their food to successfully target improvements in dietary intake and weight status.
- Collaborative partnerships and strategic efforts are needed to translate evidence into action.
- Further work on restructuring the food environment to facilitate healthy eating and physical activity, especially in high risk populations, is needed to advance evidence-based solutions that can be scaled up.

Food Environment and Settings

## Science Base Chapter:

# *Food Sustainability and Safety*

## Subcommittee 5



## Subcommittee 5 Membership

Miriam Nelson  
*SC 5 Chair*

Barbara Millen  
*DGAC Chair*

Steven Abrams  
Thomas Brenna  
Frank Hu  
Timothy Griffin\*  
Michael Hamm\*

\*Consultant



## SC 5 Scope

Address food and nutrition issues that will inform public health action and policies to promote the health of the population through sustainable diets and food safety.

Food Sustainability and Safety

2015 DGAC: MEETING 7

## Introduction

### **Sustainable Diets**

Need for dietary guidance to include the wider issue of sustainability:

- Recognizes the significant impact of foods and beverages on environmental outcomes
  - From farm to plate to waste disposal
- Important to have alignment in dietary guidance that promotes *both* health and sustainability to ensure food security for future generations

Food Sustainability and Safety

# Introduction

## Food Safety

Topics chosen because of public health concern and very recent evidence available that updates the knowledge base on health aspects:

- Coffee/caffeine
- Aspartame

Food Sustainability and Safety

# Topics/Questions Addressed

## Sustainable Diets

### *Dietary Patterns*

- What is the relationship between population-level dietary patterns and long-term food sustainability?

### *Seafood*

- What are the comparative nutrient profiles of current farm-raised versus wild caught seafood?
- What are the comparative contaminant levels of current farm-raised versus wild caught seafood?
- What is the worldwide capacity to produce farm-raised versus wild-caught seafood that is nutritious and safe for Americans?

## Food Safety

- What is the relationship between usual coffee/caffeine consumption and health?
- What is the relationship between high-dose caffeine consumption and health?
- What is the relationship between aspartame consumption and health?
- What consumer behaviors prevent food safety problems? (Topic update from 2010 DGAC)

Food Sustainability and Safety

# Methodology

## **Sustainable Diets**

### ***Dietary Patterns***

- What is the relationship between population-level dietary patterns and long-term food sustainability? [NEL Systematic Review](#)

### ***Seafood***

- What are the comparative nutrient profiles of current farm-raised versus wild caught seafood? [Data Analysis](#)
- What are the comparative contaminant levels of current farm-raised versus wild caught seafood? [Existing Reports](#)
- What is the worldwide capacity to produce farm-raised versus wild-caught seafood that is nutritious and safe for Americans? [Existing Reports](#)

## **Food Safety**

- What is the relationship between usual coffee/caffeine consumption and health? [Overview of Systematic Reviews/Meta-Analyses](#)
- What is the relationship between high-dose caffeine consumption and health? [Existing Systematic Reviews](#)
- What is the relationship between aspartame consumption and health? [Existing Reports](#)
- What consumer behaviors prevent food safety problems? [Topic update from 2010 DGAC](#)

## Major Conclusions and Recommendations Sustainability

### Dietary Patterns and Sustainability

*A dietary pattern higher in plant-based foods, such as vegetables, fruits, whole grains, legumes, nuts, and seeds, and lower in animal-based foods is more health promoting and is associated with lesser environmental impact than is the current average U.S. diet.*

- The U.S. population should be encouraged to move towards the dietary pattern noted above while decreasing overall total calories. This can be achieved through a variety of dietary patterns, including the Healthy U.S.-style Pattern, the Healthy Vegetarian Pattern, and the Healthy Mediterranean-style Pattern. Each of these patterns provides more plant-based foods and lower amounts of meat than are currently consumed by the U.S. population.

Food Sustainability and Safety

## Major Recommendations Dietary Patterns and Sustainability

- Sustainability considerations provide an additional rationale for following the Dietary Guidelines for Americans. The addition of environmental considerations to dietary guidance can be accomplished because of the compatibility and overlap between favorable health and environmental outcomes.
- Using sustainability messaging in communication strategies should be encouraged.
- Careful consideration will need to be made to ensure that sustainable diets are affordable for the entire U.S. population.

Food Sustainability and Safety



## Research Recommendations Dietary Patterns and Sustainability

1. Conduct research to determine whether sustainable diets are affordable and accessible to all sectors of the population and how this can be improved, including how policy strategies could influence the supply chain (all steps from farm to plate) to affect this improvement.
2. Develop, conduct, and evaluate in-depth analyses of U.S. domestic dietary patterns and determine the degree to which sustainability practices are important to food choice and how to increase public awareness of the impact of food choices on environmental outcomes.
3. Develop a robust understanding of how production practices, supply chain decisions, consumer behaviors, and waste disposal affect the environmental sustainability of various practices across the food components of MyPlate.
4. Determine the potential economic benefits and challenges to supply chain stakeholders in relationship to findings in Research Recommendation 3.

### Food Safety and Sustainability

## Major Conclusions and Recommendations Sustainability

### Seafood – Nutrient Profiles

*For commonly consumed fish species in the U.S. (such as salmon, trout, bass, and cod) farmed-raised fish have as much or more omega-3 fatty acids EPA and DHA as the same species captured in the wild.*

*Recommended amounts of EPA and DHA can be obtained by consuming a variety of farm-raised fish, especially high-trophic species, such as salmon and trout.*

- The U.S. population should be encouraged to eat a wide variety of seafood that can be wild caught or farmed, as they are nutrient-dense foods that are uniquely rich sources of healthy fatty acids.

## Major Conclusions and Recommendations Sustainability

### Seafood – Contaminants

*For wild and farmed species, the risks of contaminants are similar and do not outweigh the health benefits of seafood consumption, such as decreased cardiovascular disease risk.*

- Based on risk/benefit comparisons, either farmed or wild-caught seafood are appropriate choices to consume to meet Dietary Guidelines for Americans for increased seafood consumption.

## Major Conclusions and Recommendations Sustainability

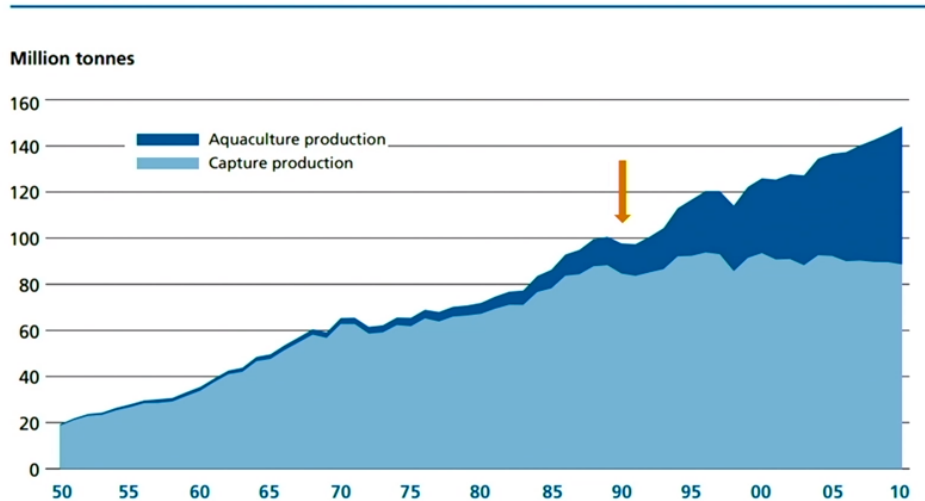
### Seafood – Sustainability

*Wild caught fish production has leveled off and farm raised production has increased to meet increasing demand. Expanded seafood production will need to rely on the continued rapid increase in farm-raised output worldwide.*

- Both wild caught and farmed seafood are major food sources available to support DGA recommendations to regularly consume a variety of seafood.
- Availability of these important foods is critical for future generations of Americans to meet their needs for a healthy diet.

## Comparison of fishery production and aquaculture, 1950-2010

World capture fisheries and aquaculture production



FAO Fisheries and Aquaculture Department Food and Agriculture Organization of the United Nations. The State of World Fisheries and Aquaculture Rome, 2012

## Research Recommendations Seafood Sustainability

1. Conduct research on methods to ensure the maintenance of nutrient profiles of high-trophic level farmed seafood and improve nutrient profiles of low-trophic farmed seafood concurrently with research to improve production efficacy.
2. Conduct research to develop methods to ensure contaminant levels in all seafood remain at levels similar to or lower than at present. Maintain monitoring of contaminant levels for capture fisheries to ensure that levels caused by pollution do not rise appreciably. This research should include developing effective rapid response approaches if the quality of seafood supply is acutely affected.

## Major Conclusions and Recommendations

### Food Safety

#### Usual Caffeine – Chronic and Neurologic Diseases

*Consumption of coffee within the moderate range (3 to 5 cups/d or up to 400 mg/d caffeine) is not associated with increased risk of major chronic diseases or premature death.*

*Moderate coffee consumption is associated with reduced risk of type 2 diabetes and cardiovascular disease.*

*Moderate coffee consumption is also associated with reduced risk of liver and endometrial cancer.*

*Moderate caffeine consumption is also associated with reduced risk of Parkinson's disease.*

- Moderate coffee consumption, because coffee is the primary source of caffeine in the U.S., can be incorporated into a healthy lifestyle, along with other behaviors, such as refraining from smoking, consuming a nutritionally balanced diet, maintaining a healthy body weight, and being physically active. It should be noted that coffee as it is normally consumed frequently contains added calories from cream, milk, and added sugars. Care should be taken to minimize these caloric additions.

Food Sustainability and Safety

## Major Conclusions and Recommendations

### Food Safety

#### Usual Caffeine – Pregnancy Outcomes

*Moderate caffeine intake in pregnant women is not associated with risk of preterm delivery.*

*Moderate caffeine intake is associated with a small increased risk of miscarriage, stillbirth, low birth weight, and small for gestational age births.*

- Evidence supports current recommendations to limit caffeine intake during pregnancy as a precaution.
- Women who are pregnant or planning to become pregnant should be cautious and adhere to current recommendations of the American Congress of Obstetricians and Gynecologists regarding caffeine consumption, and not consume more than 200 mg caffeine per day (approximately two cups of coffee per day).

Food Sustainability and Safety

limited evidence on this slide

## Research Recommendations

### Usual Caffeine

1. Evaluate the effects of coffee on health outcomes in vulnerable populations, such as women who are pregnant (premature birth, low birth weight, spontaneous abortion).
2. Examine the effects of coffee on sleep patterns, quality of life, and dependency and addiction.
3. Evaluate the prospective association between coffee/caffeine consumption and cancer at different sites.
4. Examine prospectively the effects of coffee/caffeine on cognitive decline, neurodegenerative diseases, and depression.
5. Understand the mechanisms underlying the protective effects of coffee on diabetes and CVD.
6. Understand the association between coffee and health outcomes in individuals with existing CVD, diabetes, cancer, neurodegenerative diseases, or depressive symptoms.

## Food Safety and Sustainability

## Major Conclusions and Recommendations

### Food Safety

#### High Dose Caffeine – Energy Drinks

*Evidence on the effects of excessive caffeine intake on the health of adults or children (>400 mg/day for adults; undetermined for children and adolescents) is limited.*

*Some evidence links high caffeine intake in the form of energy drinks to certain adverse outcomes, such as caffeine toxicity and cardiovascular events.*

*Mixing alcohol with energy drinks can mask the effects of alcohol intoxication, so an individual may drink more and increase risk of alcohol-related adverse events.*

- The DGAC agrees with the American Academy of Pediatrics and the American Medical Association that until safety has been demonstrated, limited or no consumption of high-caffeine drinks, or other products with high amounts of caffeine, is advised for vulnerable populations, including children, adolescents, and young adults.
- High-caffeine energy drinks and alcoholic beverages should not be consumed together.

## Food Sustainability and Safety

## Research Recommendations High Dose Caffeine

1. Define excessive caffeine intake and safe levels of consumption for children, adolescents, and young adults.
2. Determine the prevalence of excessive caffeine intake in children and adults beyond intake of energy drinks.
3. Examine the effect of excessive consumption of caffeine and energy drinks on health outcomes in both children and adults.
4. Conduct observational studies to examine the health effects of alcohol mixed with energy drinks.

### Food Safety and Sustainability

## Major Conclusions and Recommendations Food Safety

### Aspartame

*The DGAC concurs with the European Food Safety Authority (EFSA) Panel on Food Additives that aspartame in amounts commonly consumed is safe and poses minimal health risk for healthy individuals without phenylketonuria (PKU).*

*More long-term human studies need to be conducted to further assess a possible association between aspartame and risk of some hematopoietic cancers (non-Hodgkin lymphoma and multiple myeloma).*

- If individuals choose to drink beverages that are sweetened with aspartame, they should stay below the aspartame Acceptable Daily Intake (ADI) of no more than 50 mg/kg/day (12-ounce diet beverage contains approximately 180 mg of aspartame).

### Food Sustainability and Safety

## Research Recommendation Aspartame

- Examine the risks of aspartame related to some cancers, especially hematopoietic ones, and pregnancy outcomes.

## Major Conclusions and Recommendations Food Safety

### Food Safety Behaviors

- 2010 DGAC provided in-depth guidance on food-borne illness prevention. The Committee determined that the majority of the 2010 food safety guidance was current and this was carried forward with minor updates.

# Chapter Summary

## Sustainable Diets

A diet higher in plant-based foods, such as vegetables, fruits, whole grains, legumes, nuts, and seeds, and lower in animal based foods is more health promoting and is associated with less environmental impact than is the current U.S. diet.

A moderate amount of seafood is an important component of many of the dietary patterns associated with improved health and sustainability.

To supply enough fish, both farm-raised and wild caught fish will be needed. Farm-raised fish has as much EPA and DHA as wild-caught and the risks of contaminants do not outweigh the health benefits for either type.

# Chapter Summary

## Food Safety

Moderate coffee consumption (3 - 5 cups/d or up to 400 mg/d caffeine) is not associated with increased long-term health risks among healthy individuals and may provide health benefits associated with chronic disease risk.

Unfortunately, limited evidence is available to ascertain the safety of high caffeine intake, such as might occur with rapid consumption of large-sized energy drinks.

Concern is heightened when energy drinks are combined with alcoholic beverages.

At the level that the U.S. population consumes aspartame, it appears to be safe. However, some uncertainty continues about increased risk of hematopoietic cancers, indicating a need for more research.



## Introduction

- The *2010 Dietary Guidelines* identified sodium, saturated fat, and added sugars as nutrients of concern, and the 2015 DGAC determined that a reexamination of the evidence on these topics was necessary to evaluate whether revisions to the guidance were warranted.
- These topics were considered to be of public health importance because each has been associated with negative health outcomes when over-consumed.

Cross-Cutting Topics of Public Health Importance

## Introduction

- Additionally, the Committee acknowledged that a potential unintended consequence of a recommendation on added sugars might be that consumers and manufacturers replace added sugars with low-calorie sweeteners. As a result, the Committee also examined evidence on low-calorie sweeteners to inform statements on this topic.

Cross-Cutting Topics of Public Health Importance

## Introduction

- Although sodium, saturated fat, and added sugars are receiving particular focus here, it is important to consider potential changes in intake within the context of a healthy dietary pattern.
- As the Committee determined it was appropriate to address these topics across two or more Subcommittees, Working Groups were formed with representatives from the relevant Subcommittees to ensure that the topics were addressed using a cross-cutting approach.

Cross-Cutting Topics of Public Health Importance

2015 DGAC: MEETING 7  
December 15, 2014

### Sodium Working Group Membership

Cheryl Anderson  
*SWG Lead*

Wayne Campbell  
Steven Clinton  
Alice H. Lichtenstein

## Introduction

- From its first edition in 1980, the *Dietary Guidelines for Americans* consistently recommended the public reduce dietary sodium intakes.
- This recommendation is based on evidence supporting a dose-dependent relationship between sodium intake and blood pressure and observational data identifying associations between sodium intake and blood pressure and cardiovascular outcomes.
- However, despite many years of accumulating evidence and public health guidelines focused on changing individual behavior to achieve a reduced sodium intake among Americans, consumption continues to far exceed recommendations.
- The DGAC has identified dietary sodium as a nutrient of public health concern because of overconsumption, with usual intakes for those ages 2 years and older at 3,463 mg/day.

Cross-Cutting Topics of Public Health Importance

## Questions Addressed

- What is the relationship between sodium intake and blood pressure in adults? (Existing reports)
- What is the relationship between sodium intake and blood pressure in children? (NEL update of existing report)
- What is the relationship between sodium intake and cardiovascular disease outcomes? (NEL update of existing report)
- What effect does the interrelationship of sodium and potassium have on blood pressure and cardiovascular disease outcomes? (Existing reports)

Cross-Cutting Topics of Public Health Importance

## Summary of Major Conclusions

- Strong evidence: Higher sodium intake and increased blood pressure
- Moderate evidence: Higher sodium intake and increased risk of CVD
  - Inconsistent and insufficient evidence for lowering sodium intakes below 2,300 mg/day
- Insufficient evidence: Potassium and blood pressure

Cross-Cutting Topics of Public Health Importance

2015 DGAC: MEETING 7

## Major Recommendations

- Given the well-documented relationship between sodium intake and high blood pressure, sodium intake should be reduced and combined with a healthful dietary pattern.

Cross-Cutting Topics of Public Health Importance

## Major Recommendations

- **The general population, ages 2 years and older**, should rely on the recommendations of the IOM Panel on Dietary Reference Intakes for Electrolytes and Water, specifically the Tolerable Upper Intake Levels (ULs) for the appropriate age group.
- **Individuals who would benefit from blood pressure lowering (i.e., those with prehypertension and hypertension)**, should rely on the recommendations in the 2013 AHA/ACC Lifestyle Report. These include:
  - lowering sodium intake in general; or
  - consuming no more than 2,400 mg of sodium/day; or
  - lowering sodium intake to 1,500 mg per day for even greater reduction in blood pressure; or
  - lowering sodium intake by at least 1,000 mg per day even if the goals of 2,400 or 1,500 mg per day cannot be met.

Cross-Cutting Topics of Public Health Importance

2015 DGAC: MEETING 7

## Major Recommendations

- A primary emphasis should be placed on policies and population-based strategies for sodium reduction while at the same time paying attention to consumer education.
- Local, state, and Federal agencies should consider a comprehensive and coordinated strategy, that includes partnerships with the food industry, to reduce the sodium content of foods in the United States based on the socio-ecological model highlighted in the 2015 DGAC's conceptual model.
- These strategies should be consistent with the recommendation described in the 2010 IOM report on *Strategies to Reduce Sodium Intake in the United States*.

Cross-Cutting Topics of Public Health Importance

## Saturated Fat Working Group Membership

Frank Hu  
*SFWG Lead*

Tom Brenna  
Alice H. Lichtenstein  
Barbara Millen

2015 DGAC: MEETING 7

## Introduction

- The relationship between different types of dietary fats and risk of CVD has been extensively studied in RCTs and epidemiologic studies.
- Numerous RCTs have demonstrated that saturated fat as compared to mono- (MUFA) or polyunsaturated fats (PUFA) or carbohydrates increases total and LDL cholesterol. Thus, limiting saturated fat consumption has been a longstanding dietary recommendation to reduce risk of CVD.
- Although saturated fat intake has declined in the past decades, current intake is still high at a median of 11.1 percent of daily calories.
- A central issue in the relationship between saturated fat and CVD is the specific macronutrients that are used to replace it because consuming unsaturated fats versus carbohydrates in place of saturated fat can have different effects on blood lipids and risk of CVD. Thus, the Committee's assessment of the available evidence puts greater emphasis on the replacement macronutrient for saturated fat.

Cross-Cutting Topics of Public Health Importance

## Topics/Questions Addressed

- What is the relationship between intake of saturated fat and risk of cardiovascular disease? (Existing reports)

Cross-Cutting Topics of Public Health Importance

2015 DGAC: MEETING 7

## Major Conclusions

- Strong evidence: Replacing saturated fat with unsaturated fats, especially PUFAs, reduces LDL-cholesterol and CVD risk
- Strong evidence: Replacing saturated fat with overall carbohydrates does not lower CVD risk
- Limited evidence: Replacing saturated fat with MUFAs

## Major Recommendations

- Recommendations on saturated fat intake should specify replacement macronutrients and emphasize replacing saturated fat with unsaturated fats, especially polyunsaturated fats.
- The Committee recommends retaining the 10 percent upper limit for saturated fat intake.

## Major Recommendations

- In practice, non-hydrogenated vegetable oils that are high in unsaturated fats and relatively low in SFA (e.g., soybean, corn, olive, and canola oils) instead of animal fats (e.g., butter, cream, beef tallow, and lard) or tropical oils (e.g., palm, palm kernel, and coconut oils) should be recommended as the primary source of dietary fat.
- In low-fat diets, fats are often replaced with refined carbohydrates and this is of particular concern because such diets are generally associated with dyslipidemia (hypertriglyceridemia and low HDL-C concentrations). Therefore, dietary advice should put the emphasis on optimizing types of dietary fat and not reducing total fat.



## Major Recommendations

- When individuals reduce consumption of refined carbohydrates and added sugar, they should not replace them with foods high in saturated fat. Instead, refined carbohydrates and added sugar should be replaced by healthy sources of carbohydrates (e.g., whole grains, legumes, vegetables, and fruits), healthy sources of fats (e.g., non-hydrogenated vegetable oils that are high unsaturated fats, and nuts/seeds), or healthy sources of protein (e.g., nuts, legumes, lean meats, and low-fat dairy). The consumption of “low-fat” or “nonfat” products with high amounts of refined grains and added sugars should be discouraged.

## Major Recommendations

- Dietary recommendations on macronutrient composition for reducing CVD risk should be dietary pattern-based emphasizing foods that characterize healthy dietary patterns.

## Added Sugars Working Group Membership

Miriam Nelson  
Mary Story  
*ASWG Co-Leads*

Cheryl Anderson  
Wayne Campbell  
Frank Hu  
Alice H. Lichtenstein  
Barbara Millen  
Marian Neuhouser

2015 DGAC: MEETING 7

## Introduction

- Added sugars are sugars that are either added during the processing of foods, or are packaged as such, and include sugars (free, mono- and disaccharides), syrups, naturally occurring sugars that are isolated from a whole food and concentrated so that sugar is the primary component (e.g., fruit juice concentrates), and other caloric sweeteners.
  - The *2010 Dietary Guidelines* also included guidance stating that, for most people, no more than about 5 to 15 percent of calories from solid fats and added sugars (combined) can be reasonably accommodated in a healthy eating pattern.
  - The current intake of added sugars still remains high at 268 calories or 13 percent of total calories per day among the total population, and 15 to 17 percent in children 9 and older, adolescents, and young adults.
-

# Introduction

## 2015 DGAC Food Pattern Modeling: Added sugars available in the USDA Food Patterns (Healthy U.S.-Style, Healthy Mediterranean-Style, and Vegetarian Patterns) in calories, teaspoons, and percent of total calories per day\*

| CALORIE LEVEL                                                                                                                    | 1000 | 1200 | 1400 | 1600 | 1800 | 2000 | 2200 | 2400 | 2600 | 2800 | 3000 | 3200 |
|----------------------------------------------------------------------------------------------------------------------------------|------|------|------|------|------|------|------|------|------|------|------|------|
| Empty calorie limits available for <b>added sugars</b><br>(assuming 45% empty calories from added sugars and 55% from solid fat) |      |      |      |      |      |      |      |      |      |      |      |      |
| Healthy U.S.-style                                                                                                               | 68   | 50   | 50   | 54   | 77   | 122  | 126  | 158  | 171  | 180  | 212  | 275  |
| Healthy Med-style                                                                                                                | 63   | 50   | 50   | 81   | 72   | 117  | 126  | 135  | 149  | 158  | 194  | 257  |
| Vegetarian                                                                                                                       | 77   | 77   | 81   | 81   | 81   | 131  | 131  | 158  | 158  | 158  | 185  | 234  |
| Average                                                                                                                          | 69   | 59   | 60   | 72   | 77   | 123  | 128  | 150  | 159  | 165  | 197  | 255  |
| Average (tsp)                                                                                                                    | 4.3  | 3.7  | 3.8  | 4.5  | 4.8  | 7.7  | 8.0  | 9.4  | 9.9  | 10.3 | 12.3 | 15.9 |
| Healthy U.S.-style                                                                                                               | 7%   | 4%   | 4%   | 3%   | 4%   | 6%   | 6%   | 7%   | 7%   | 6%   | 7%   | 9%   |
| Healthy Med-style                                                                                                                | 6%   | 4%   | 4%   | 5%   | 4%   | 6%   | 6%   | 6%   | 6%   | 6%   | 6%   | 8%   |
| Vegetarian                                                                                                                       | 8%   | 6%   | 6%   | 5%   | 5%   | 7%   | 6%   | 7%   | 6%   | 6%   | 6%   | 7%   |
| Average                                                                                                                          | 7%   | 5%   | 4%   | 5%   | 4%   | 6%   | 6%   | 6%   | 6%   | 6%   | 7%   | 8%   |

\* See *Part D, Chapter 1: Food and Nutrient Intakes, and Health: Current Status and Trends* and Appendix E3.7 for a full discussion of the food pattern modeling.

# Introduction

- Although food pattern modeling evaluates the amount of added sugars that can be consumed while meeting food group and nutrient needs, the DGAC also reviewed scientific literature examining the relationship between the intake of added sugars and health to inform recommendations.
- The Committee focused on the health outcomes most commonly researched related to added sugars, specifically, body weight and risk of type 2 diabetes, CVD, and dental caries.

## Topics/Questions Addressed

- What is the relationship between the intake of added sugars and cardiovascular disease, body weight/obesity, type 2 diabetes, and dental caries?
  - NEL systematic review: CVD
  - Existing reports: BW, T2D, and dental caries
- What is the relationship between the intake of low-calorie sweeteners and body weight/obesity and type 2 diabetes?
  - Existing reports

## Summary of Major Conclusions

- Added sugars, especially sugar-sweetened beverages:
  - Strong evidence for an increased risk of:
    - Excess body weight and obesity
    - Type 2 diabetes
  - Moderate evidence for an increased risk of:
    - Hypertension, stroke, and CHD; higher blood pressure and serum triglycerides
    - Dental caries

## Summary of Major Conclusions

- Low-calorie sweeteners:
  - Moderate evidence for replacing sugar-containing sweeteners with low-calorie sweeteners for reducing calorie intake, body weight, and adiposity in short duration studies
  - Limited and inconsistent evidence of an association between low-calorie sweeteners and long-term body weight control and risk of type 2 diabetes

## Major Recommendations

- Strong evidence supports reducing added sugars intake to reduce health risks.
- **The DGAC recommends limiting added sugars to a maximum of 10 percent of total daily caloric intake.** This recommendation is supported by:
  1. The food pattern modeling analysis conducted by the 2015 DGAC and
  2. The scientific evidence review on added sugar and chronic disease risk conducted by the Committee.

## Major Recommendations

- Since 39 percent of added sugars are from sugar-sweetened beverages, efforts are needed to reduce these beverages.
- The recommendation to limit added sugars, especially sugar-sweetened beverages, is consistent with recommendations from national and international organizations.

## Major Recommendations

- Because the evidence for low-calorie sweeteners is insufficient (due to a paucity of data), those sweeteners should not be recommended for use as a primary replacement/substitute for added sugars in foods and beverages.

## Major Recommendations

- Policies and programs at local, state, and national levels in both the private sector and public sector are necessary to support efforts to lower added sugar in foods and beverages and to limit availability of sugar sweetened beverages and snacks.
  - Water is the preferred beverage choice.
  - The Nutrition Facts Panel should include added sugars (in grams and teaspoons).
  - Consumers would benefit from a front-of-package label.

## Major Recommendations

- Policies and programs, continued:
  - Economic and pricing approaches, using incentives and disincentives, should be explored.
  - Efforts to reduce added sugars in foods and sugar-sweetened beverages in school meals should continue.
  - Policies that limit exposure and marketing of foods and beverages high in added sugars to young children, youth and adolescents are needed.

## Major Recommendations

- Policies and programs, continued:
  - Health promotion efforts and policies are needed to reduce sugar-sweetened beverages in post-secondary institutions and worksites.
  - Policy changes within the Supplemental Nutrition Assistance Program (SNAP) should be considered to encourage purchase of healthier options.
  - Public education campaigns are needed.



## Chapter Summary

- The DGAC encourages the consumption of healthy dietary patterns that are low in saturated fat, added sugars, and sodium.
- The conclusions in this chapter complement the findings from *Chapter 1: Food and Nutrient Intakes, and Health: Current Status and Trends* and *Part D. Chapter 2: Dietary Patterns, Foods and Nutrients, and Health Outcomes*.
- The goals for the general population are: less than 2,300 mg dietary sodium per day (or age-appropriate Dietary Reference Intake amount), less than 10 percent total calories from saturated fat per day, and a maximum of 10 percent of total calories from added sugars per day.

## Chapter Summary

- Rather than focusing purely on reduction, emphasis should be placed on replacement and shifts in food intake and overall dietary patterns.
- Policies and programs at local, state, and national levels in both the private and public sector are necessary to support reduction efforts.
- The Committee supports efforts in labeling and other campaigns to increase consumer awareness and understanding of sodium, saturated fats, and added sugars in foods and beverages.

## Major Recommendations

- Policies and programs, continued:
  - Health promotion efforts and policies are needed to reduce sugar-sweetened beverages in post-secondary institutions and worksites.
  - Policy changes within the Supplemental Nutrition Assistance Program (SNAP) should be considered to encourage purchase of healthier options.
  - Public education campaigns are needed.

## Major Recommendations

- Policies and programs, continued:
  - Economic and pricing approaches, using incentives and disincentives, should be explored.
  - Efforts to reduce added sugars in foods and sugar-sweetened beverages in school meals should continue.
  - Policies that limit exposure and marketing of foods and beverages high in added sugars to young children, youth and adolescents are needed.

## Major Recommendations

- Policies and programs at local, state, and national levels in both the private sector and public sector are necessary to support efforts to lower added sugar in foods and beverages and to limit availability of sugar sweetened beverages and snacks.
  - Water is the preferred beverage choice.
  - The Nutrition Facts Panel should include added sugars (in grams and teaspoons).
  - Consumers would benefit from a front-of-package label.

## Physical Activity Writing Group Membership

Mim Nelson  
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Wayne Campbell  
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2015 DGAC: MEETING 7

### Introduction

- The combination of a healthy diet and regular physical activity is central to promoting overall health and preventing many chronic diseases.
  - Physical activity is important for all people—children, adolescents, adults, older adults, women during pregnancy and the postpartum period, and individuals with disabilities.
-

## Topics & Questions Addressed

### **Physical Activity Dose**

What dose of physical activity is most likely to provide health benefits in children and adolescents ?

What dose of physical activity is most likely to provide health benefits in adults?

Are there any special considerations for dose of physical activity for older adults?

### **Physical Activity and Health Outcomes in Children and Adolescents**

What is the relationship between physical activity, body weight, and health outcomes in children and adolescents?

## Topics & Questions Addressed

### **Physical Activity and Health Outcomes in Adults**

What is the relationship between physical activity and body weight?

What is the relationship between physical activity and cardiorespiratory health?

What is the relationship between physical activity and metabolic health and risk of type 2 diabetes?

What is the relationship between physical activity and musculoskeletal health?

What is the relationship between physical activity and incidence of breast and colon cancer?

What is the relationship between physical activity and mental health?

## Topics & Questions Addressed

### **Physical Activity and Health Outcomes in People with Disabilities**

What is the relationship between physical activity and health outcomes in people with disabilities?

### **Physical Activity and Health Outcomes During Pregnancy and the Postpartum Period**

Does being physically active during pregnancy and the postpartum period provide health benefits?

### **Physical Activity and Adverse Events**

What is the relationship between the amount and type of physical activity and the risk of adverse events?

## Topics & Questions Addressed

### **Physical Activity Interventions in Children and Adolescents**

What is the relationship between physical activity participation and interventions in school-based settings?

What is the relationship between physical activity participation and interventions to change the built environment?

What is the relationship between physical activity participation and interventions based in home settings?

What is the relationship between physical activity participation and interventions based in early care and education centers?

What is the relationship between physical activity participation and interventions based in primary health care settings?

## Sources of Evidence

### Existing federal physical activity-related reports:

Physical Activity Guidelines Advisory Committee Report,  
2008

Physical Activity Guidelines for Americans, 2008

Physical Activity Guidelines for Americans Midcourse Report:  
Strategies to Increase Physical Activity Among Youth

## Physical Activity Guidelines for Americans

### Recommendations for Children and Adolescents Ages 6 to 17 Years

Children and adolescents should do 60 minutes or more of physical activity daily.

- **Aerobic:** Most of the 60 or more minutes a day should be either moderate- or vigorous-intensity aerobic physical activity, and should include vigorous-intensity physical activity at least 3 days a week.
- **Muscle-strengthening:** As part of their 60 or more minutes of daily physical activity, children and adolescents should include muscle-strengthening physical activity on at least 3 days of the week.
- **Bone-strengthening:** As part of their 60 or more minutes of daily physical activity, children and adolescents should include bone-strengthening physical activity on at least 3 days of the week.

## Physical Activity Guidelines for Americans

### Recommendations for Adults Ages 18 years and Older

- Adults should do at least 150 minutes (2 hours and 30 minutes) a week of moderate-intensity aerobic physical activity
  - OR 75 minutes (1 hour and 15 minutes) a week of vigorous-intensity aerobic physical activity
  - OR an equivalent combination of moderate- and vigorous intensity aerobic activity
- For additional and more extensive health benefits, adults should increase their aerobic physical activity to 300 minutes (5 hours) a week of moderate intensity
  - OR 150 minutes a week of vigorous intensity aerobic physical activity
  - OR an equivalent combination of moderate- and vigorous-intensity activity
- Adults should also do muscle-strengthening activities that are moderate or high intensity and involve all major muscle groups on 2 or more days a week

## Physical Activity Guidelines for Americans

### Recommendations for Adults Ages 65 years and Older

- When older adults cannot do 150 minutes of moderate-intensity aerobic activity a week because of chronic conditions, they should be as physically active as their abilities and conditions allow.
- Older adults should do exercises that maintain or improve balance if they are at risk of falling.
- Older adults should determine their level of effort for physical activity relative to their level of fitness.



## Major Conclusions and Recommendations

- Being physically active is one of the most important steps that people of all ages can take to improve and maintain their health.
- All individuals should avoid physical inactivity.
- The majority of the U.S. population does not meet physical activity recommendations.

## Major Conclusions and Recommendations

- Ensure that all individuals have access to safe, affordable, and enjoyable modes of physical activity throughout the day in the environments where they live, learn, work, and play.

## Chapter Summary

- There is strong evidence supporting the importance of regular physical activity for health promotion and disease prevention in the U.S. population.
- Given the low physical activity participation rates in this country, it is critically important to identify proven strategies and approaches to increase population-level physical activity across the lifespan.

## Key Themes

- **The problem:** high rates of *preventable* chronic diseases and overweight/obesity
  - Focus in the United States has generally been on disease treatment rather than prevention
- **The gap:** suboptimal dietary intake
  - Low in vegetables, fruit, whole grains
  - High in sodium, saturated fat, refined grains, added sugars, and calories



## Healthy Dietary Patterns

- 2015 DGAC identified a healthy dietary pattern as:
  - High in vegetables, fruits, whole grains, low-fat dairy, seafood, legumes, and nuts
  - Moderate in alcohol
  - Lower in red and processed meats
  - Low in added sugars (not more than 10 percent of total energy)
  - Low in refined grains
- The DGAC also recommends that, as part of a healthy dietary pattern,
  - saturated fat not exceed 10% of total energy (emphasizing substitution of polyunsaturated fats for saturated fats)
  - limiting sodium intake to not more than 2300 mg per day
  - Calories to meet energy needs and to achieve and maintain ideal body weight
- Associated with more favorable environmental outcomes

## Healthy Lifestyle Approach

- The dietary pattern should be flexible (not prescriptive) and tailored and personalized to meet the individual's or communities:
  - Health needs
  - Dietary preferences
  - Cultural traditions
- Regular physical activity
- *Individual level changes* – self-monitoring, family shared meals, decreasing sedentary behavior and screen time, interventions implemented by nutrition professionals and individual or small group comprehensive lifestyle interventions conducted by nutritionists and trained health professionals
- *Population level changes* – targeted environmental and policy changes and standards, collaboration across systems and sectors, engagement of parents and families

## Key Components for a Culture of Health

- Population health is a national priority
- Healthy lifestyle approaches are easy, accessible, affordable, and normative
- Health care and public health professionals have a leadership role in prevention
- Collaboration across societal sectors to promote population health
- Incentives to encourage initiatives, environmental changes, policy changes, food and beverage standards, and preventive services



## Actions for Individuals, Families, and Households

- Take action to promote personal and household/family health
- Know and understand how to modify your diet and physical activity to reduce personal and family member health risks
- Achieve a healthy dietary pattern through healthy foods and beverages rather than nutrient or dietary supplements
- Use available Dietary Guidelines for Americans tools and other sound resources to initiate positive personal lifestyle changes to improve dietary and physical activity behaviors, including goal setting and self-monitoring

## Actions for Communities and Populations

- Aim to make healthy lifestyles and prevention a national and local priority and reality
- Seek a paradigm shift in health care and public health toward a greater focus on prevention and integration with food systems
- Establish healthy food environments (schools, worksites, early child care settings, etc.)

## Actions for Communities and Populations

- Support and expand access to healthy built environments and advocate wide community use
- Maintain strong support for Federal food and nutrition programs
- Recognize and place priority on moving toward a more sustainable diet consistent with the healthy dietary pattern options. Access to sufficient, nutritious, and safe food is an essential element of food security for the U.S. population. A sustainable diet helps ensure this access for both the current population and future generations.