

Dietary Guidelines for Americans (DGA): Women, Infants, Toddlers and Future Needs

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Learning Objectives

1. Identify and explain new findings and DGAC recommendations for eating for women who are pregnant or lactating.
2. Identify and explain new findings and DGAC recommendations on what and when to feed infants and toddlers.
3. Identify and explain key research gaps needed to inform future DGAC.

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DGA: Summary Women of Reproductive Age

- Healthy weight
- Healthy dietary patterns
- Allergenic food intake (do not avoid unless pregnant woman has known allergy)
- Consume seafood (8-12 oz / wk, low in methyl mercury and high in omega-3 fatty acids)
- No alcohol
- Food safety

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DGAC Advice: Pregnancy (Chapter 2)

- 3 food patterns (Healthy US, Healthy Vegetarian and Healthy Mediterranean-style) are expected to meet nutrient needs
 - With the possible exception of: Choline, Iron, Vitamin D, and Vitamin E.
 - Iron supplementation may be needed
- Folic acid supplementation should be begin prior to conception.
- Achieve a healthy weight pre-pregnancy and strive for weight gain within National Academy of Science Engineering and Medicine recommendations.

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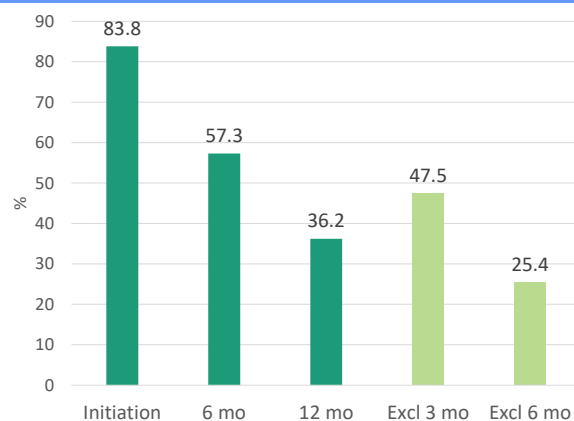
DGAC Advice: Lactation (Chapter 3)

- Recommend consumption of healthy dietary pattern described in the report, **including seafood** in accordance with FDA and EPA recommendations.
 - Encourage food and beverages that are good sources of choline, magnesium, protein, fiber, and vitamins A, D, and E.
- **Discontinue** prenatal high iron dose supplements unless medically indicated.
- Avoidance of potentially allergenic foods during lactation is not recommended – diversity of diet is important.
- Follow existing guidance on alcohol and caffeine consumption.
- Maintenance of healthy weight.

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DGAC Analytic Results: Breastfeeding initiation, duration, and exclusivity

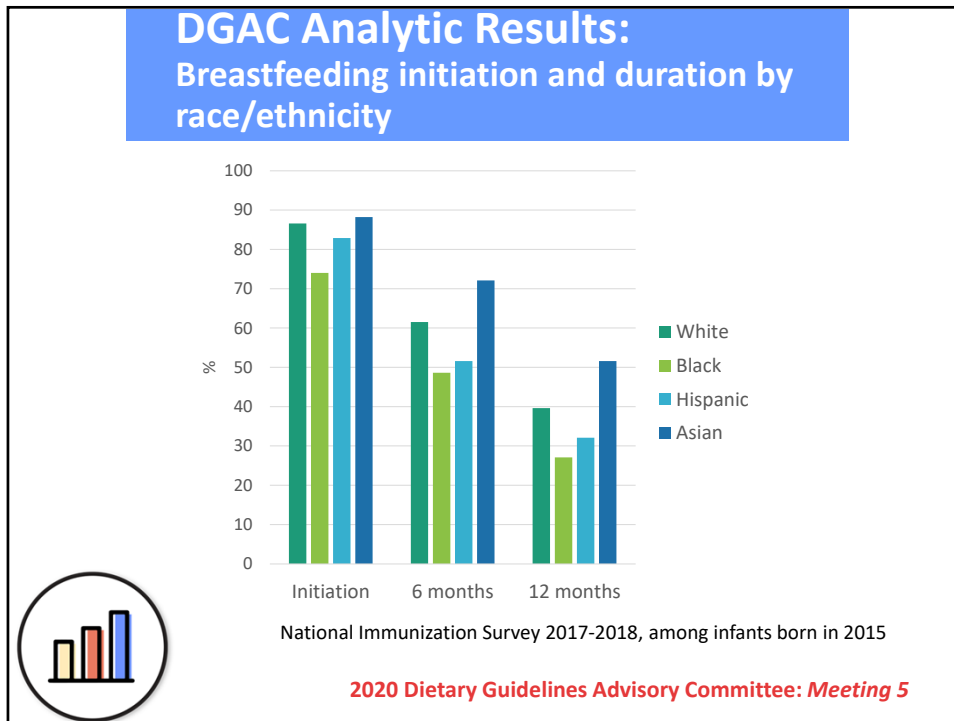


National Immunization Survey 2017-2018, among infants born in 2015

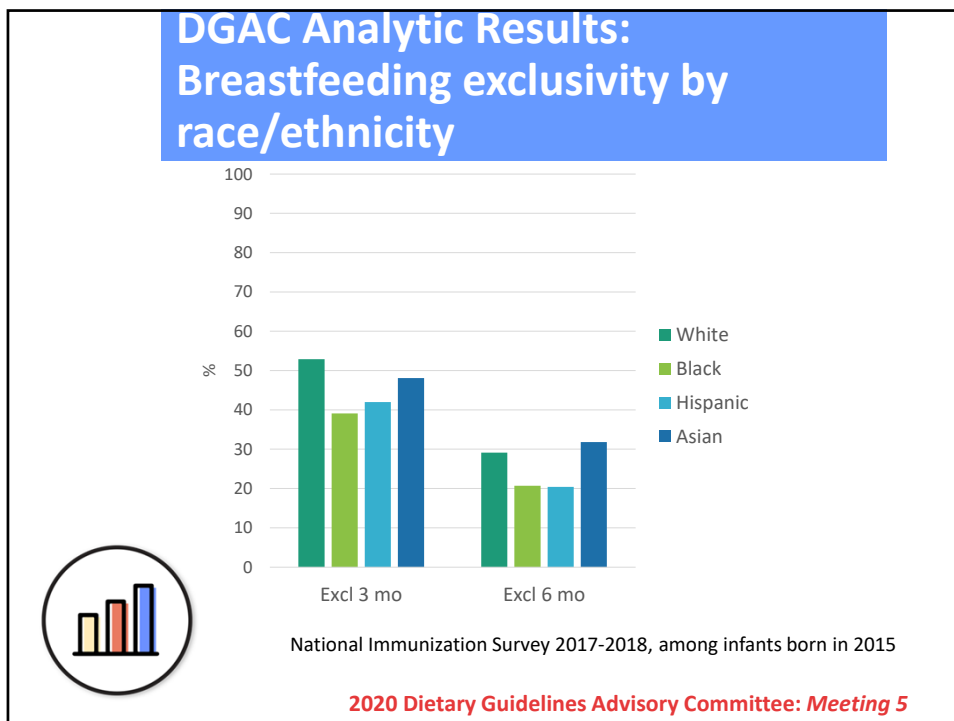
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DGAC Analytic Results: Low and High Birth Size



- o 1.4 percent are low weight-for-recumbent length
- o 3.2 percent are low recumbent length-for-age
- o 1.7 percent are low weight-for-age
- o **8.9 percent are high weight-for-recumbent length**

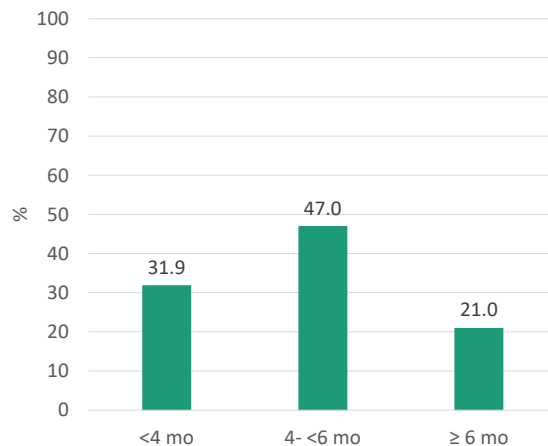
Low birthweight increased to 8.27 percent in 2017 from 8.17 percent in 2016

- Very low birthweight (born at less than 1,500 grams) was 1.40 percent
- From 2016-2017
 - **low birthweight increased for non-Hispanic Black mothers (13.68 percent to 13.88 percent)- the highest since data collection began in 1993**
 - **Low birth weight increased for Hispanic mothers (7.32 percent to 7.42 percent)**
 - Low birth weight stayed relatively constant for non-Hispanic White mothers (6.97 percent to 7.00 percent)

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DGAC: Analytic Results

Timing of introduction of complementary foods and beverages

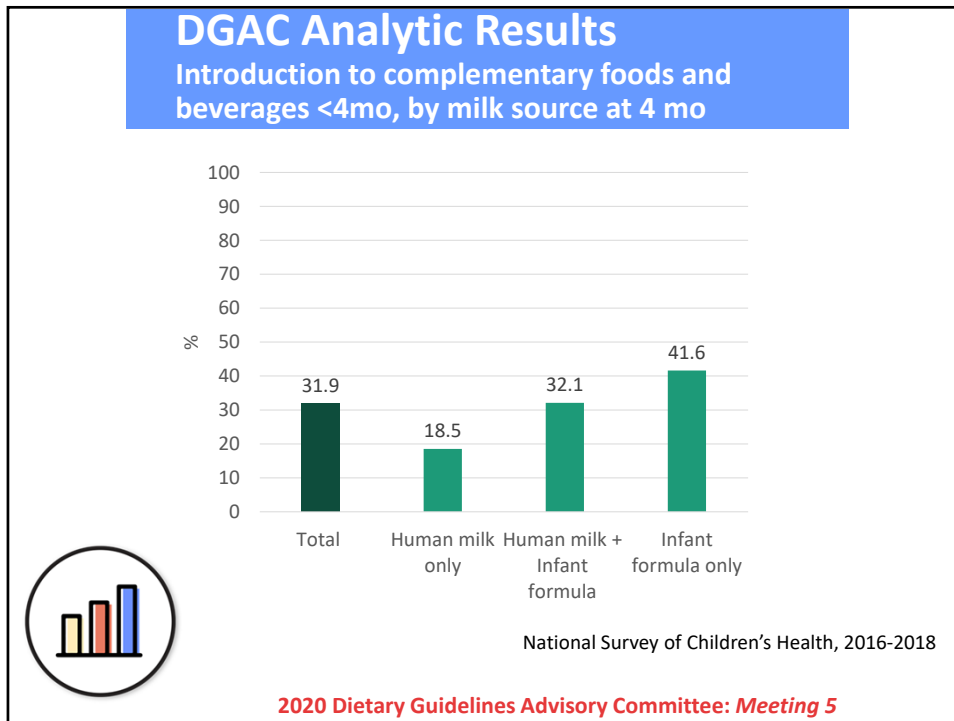


National Survey of Children's Health, 2016-2018

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DGAC Analytic Results

Mean reported intakes of (complementary) food groups, by age

	6 to 11 months ¹	12-23 months ¹	2 – 5 years males ²	2-5 years females ²
Fruit, cup-eq	0.62	1.25	1.23	1.19
Vegetables, cup-eq	0.40	0.56	0.70	0.66
Protein foods, oz-eq	0.48	1.94	3.13	2.91
Grains, oz-eq	1.07	3.07	5.34	4.53
Dairy, cup-eq	0.26	2.56	1.98	1.90
Oil, grams	1.7	8.4	17.63	15.86
Solid fat, grams	3.3	24.7	27.47	25.06
Added sugars,tsp-eq	1.0	6.2	11.34	9.81

1. WWEIA, NHANES 2007-2016, individuals ages 6<12 months and 12<24 months, day 1 dietary intake data, weighted.
2. WWEIA, NHANES 2015-2016, individuals ages 2-5 years, day 1 dietary intake data, weighted.

Notes:
† indicates an estimate that may be less precise than others due to small sample size and/or large relative standard error.
indicates a non-zero value too small to present. Sample based on age at Mobile Examination Center.
Complementary foods include all foods and beverages except human milk and infant formula.
Milk reporting status determined by the report of human milk on either day 1 or day 2.

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DGAC Advice: Infants (Chapter 4 & 5)

Breastfeeding

- Encourage exclusive breastfeeding, ideally for the first 6 months of life, with continued breastfeeding through the first year of life or longer as desired by the mother and infant.

Complementary Food and Beverage (CFB) introduction

- Should not be introduced before 4 months. Introduction at 4-5 months as compared to 6 months does not offer long term advantages or disadvantages.
- Provide foods that are rich in iron and zinc, either intrinsically (e.g., meats) or due to fortification (e.g., iron fortified infant cereal), particularly during 6 to 12 months among breastfed infants.
- Provide CFB that contain adequate amounts of polyunsaturated fatty acids.
- Avoid consumption of sugar-sweetened beverages or other added sugars by children younger than age 2 years.

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DGAC Advice: Infants and Food allergy (Chapter 5)

Complementary Food and Beverage (CFB) introduction

- Introduce peanut and egg in the first year of life (6-12 months), after CFB are introduced.
 - To build tolerance to food antigens (i.e., help prevent food allergies) and to provide good sources of fatty acids and choline.
- Committee found no evidence that avoiding other allergenic foods (fish, shellfish, cow milk products, tree nuts, seeds, wheat, and soy) in the first year of life is beneficial with regard to preventing food allergies or other atopic or allergic diseases.



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DGAC Advice: Supplementation of Infants (Chapter 6)

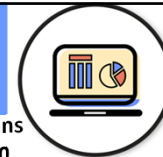


- Routine iron supplementation of all breastfed infants may not be advisable.
 - Moderate evidence from systematic review showed no greater and possibly slower growth if supplemented with iron and alterations in absorption of other trace minerals, and gastrointestinal effects such as diarrhea, vomiting, and changes to the gut microflora
 - After 6 months, other sources of iron can be provided, such as iron-rich or iron-fortified complementary foods, so iron supplementation is generally not needed.
- No basis for recommending vitamin D supplementation above 400 IU per day during infancy.
 - No relationship with biomarkers found

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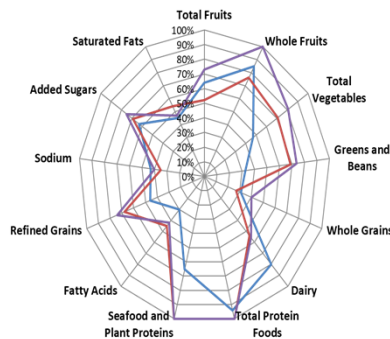
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DGAC Analysis: HEI-2015 Scores By Age Groups



Average dietary quality, measured by the HEI-2015, for Americans is not consistent with the recommendations from the 2015-2020 Dietary Guidelines for Americans. Scores increase with age.

Total HEI-2015 Score By Age Groups		
2-19Y (53)	20-64Y (59)	65+Y (64)



- Children achieve at $\geq 70\%$ of the max score in three categories: whole fruits, total protein foods, and dairy.
- Compared to children, young to middle age adults have higher scores in the additional components of total vegetables, greens and beans, and seafood and plant protein.
- Notably, those older than 19 have a lower score in the Dairy component compared to the 2-19 year old group.

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DGAC Analyses: Overweight and Obesity of Children



- Among children ages 2 to 19 years, 41 percent of children are overweight or obese.
 - Overweight is higher in girls ages 2 to 19 (17.6 percent) than in boys (15.7 percent).
 - Obesity and severe obesity is higher in boys (19.1 percent and 6.3 percent, respectively) than in girls (17.8 percent and 4.9 percent, respectively)

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DGAC Analysis: Obesity by age

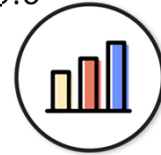


- The prevalence of **obesity** in all children increases with age
 - 13.9 percent for ages 2 to 5 years
 - 18.4 percent for ages 6 to 11 years
 - 20.6 percent for ages 12 to 19 years

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DGAC Analysis:
Since 2007-2008, obesity has increased from 16.8 percent to 18.5 percent

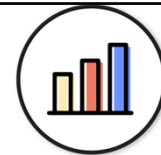
- Girls had an increase from 15.9 percent to 17.8 percent
- Boys had an increase from 17.7 percent to 19.1 percent
- Ages 2 to 5 years from 10.1 percent to 13.9 percent
- Ages 12 to 19 years from 18.1 percent to 20.6 percent
- However, children ages 6 to 11 years had a small decrease in the prevalence of obesity, from 19.6 percent to 18.4 percent



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DGAC Analysis:
Obesity by education and geography

- The prevalence of obesity among children ages 12 to 19 years decreases as education of the head of household increases
 - 22.3 percent for high school diploma or less
 - 18.1 percent for some college
 - 11.6 percent for college graduate
- The prevalence of obesity among children changes among metropolitan statistical areas (MSA)
 - The prevalence is 17.1 percent in a large MSA and similarly is 17.2 percent in medium or small MSA
 - but increases to 21.7 percent for non-MSA (i.e., rural areas)



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**DGAC Recommendation:
Develop a continuous DGA process
to review evidence to better identify
and evaluate evidence, better
document the current state of
science and prioritize topics by:**

- Continuous review of literature
- Continuous engagement of public and subject-matter experts

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**DGAC Research Gap/Need:
Other content areas to include in
the DGA**

- Diet and microbiome
- Diet and immune function
- Genetics and epigenetics and healthy diet
- Optimal diet for healthy aging

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DGAC Research Gap/Need: Surveillance Data for Diverse Groups

- Diversity in surveillance data (NHANES, WWEIA) on food and beverage intake of underrepresented populations, life stages and context of eating
 - Racial/ethnic populations- Native Americans, Pacific Islanders and Native Hawaiians
 - Life stages- pregnant and lactating women, infants and children less than 24 months
 - Varying socioeconomic status, food security status, cultural food traditions, and religious or ethnic foods
- Enable linkage of surveillance systems
 - Mother and child
 - Infant feeding and health outcomes
- Enable linkage of parent-child or other family member intakes within surveys

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DGAC Research Gap/Need: Human milk composition data

- Continue the ongoing Federal initiative to expand research on human milk composition
 - Update USDA databases to establish a reference or standard human milk composition profile that incorporates data from diverse populations and across lactation
 - By maternal diet and other factors
 - Across the full course of lactation, including beyond 1 year of life
- Update Dietary Reference Intakes (DRIs) accordingly
 - Including Upper Limit
 - Coordinate with WHO and harmonize DRIs

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DGAC Research Gap/Need: Methods

- Harmonize the Federal sampling framework with the DRI age groups, and develop clear definitions of life stages.
- Need more biomarker data
 - Iodine and zinc, especially for infants and children less than 24 months
- For infants need stratification by milk source – breast or formula
- Continued improvement of dietary assessment methods
- Develop a diet score, such as HEI, for B-24 months
- Conduct meta-analyses

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DGAC Research Gap/Need: Collaboration across Government

- To address dietary recommendations for diet-related chronic diseases
- To address systems science approaches
 - to achieving dietary recommendations
 - to address complex factors that influence diet such as socio-economic factors; food security; food access, availability and cost
- Consensus on recommendations with professional groups
 - Eg. Macronutrient intakes for women with gestational diabetes, which currently ranges from 33-60%
 - American College of Obstetricians and Gynecologists recommends- 33 to 40 percent
 - American Diabetes Association- none
 - Academy of Nutrition and Dietetics- about 37 to 60 percent
 - Endocrine Society- 35 to 45 percent
 - International Federation of Gynecology and Obstetrics- 35 to 45 percent

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