

2020 Dietary Guidelines Advisory Committee: DRAFT - Part D. Chapter 5: Food and Beverages Consumed During Infancy and Toddlerhood

Members Involved in Drafting this Chapter:

Kay Dewey

Lydia Bazzano

Teresa Davis

Sharon Donovan

Elsie Taveras

Ron Kleinman



This chapter includes questions examined by the
Birth to 24 Months Subcommittee

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LIST OF QUESTIONS, part 1

1. What is the relationship between complementary feeding and **growth, size, and body composition**?
2. What is the relationship between complementary feeding and **developmental milestones, including neurocognitive development**?
3. What is the relationship between complementary feeding and **nutrient status**?
4. What is the relationship between complementary feeding and **bone health**?
5. What is the relationship between complementary feeding and **food allergies and atopic allergic diseases**?

METHODOLOGY, part 1

- Questions 1 through 5 were answered using existing NESR systematic reviews from the Pregnancy and Birth to 24 Months Project, published in 2019.

**Final protocols and draft conclusion statements available at [DietaryGuidelines.gov](https://www.dietaryguidelines.gov)
Part D. Chapter 5: Food and Beverages Consumed During Infancy and Toddlerhood
2020 Dietary Guidelines Advisory Committee: *Meeting on Draft Report***

LIST OF QUESTIONS, part 2

6. What is the relationship between added sugars consumption during infancy and toddlerhood and risk of cardiovascular disease?
7. What is the relationship between types of dietary fats consumed during infancy and toddlerhood and risk of cardiovascular disease?
8. What is the relationship between seafood consumption during infancy and toddlerhood and risk of cardiovascular disease and neurocognitive development?

METHODOLOGY, part 2

- Questions 6 through 8 were part of the scope of new NESR systematic reviews conducted by the Beverages and Added Sugars Subcommittee and the Dietary Fats and Seafood Subcommittee; the questions examined intake of added sugars, types of dietary fats, and seafood in populations that included infants and toddlers

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REVIEW OF THE SCIENCE

- Over 230 articles were included in the NESR systematic reviews.
- Conclusion statements were graded from Strong to Grade Not Assignable.
- Most articles were from 10 existing NESR systematic reviews that examined the timing of introduction and/or types and amounts of complementary foods and beverages consumed and health outcomes.
- Articles that examined the birth to 24 months population in new NESR systematic reviews were also considered:
 - 1 article on added sugars and cardiovascular disease
 - 3 articles on types of dietary fats and cardiovascular disease
 - No studies were identified on seafood consumption and cardiovascular disease or neurocognitive development
- Most evidence measured outcomes during childhood
- Most evidence consisted of observational studies, and many reviews also included RCTs

DISCUSSION

Timing of complementary food and beverage (CFB) introduction

The evidence suggests that:

- CFB should not be introduced to infants before 4 months of age
 - Findings consistent with a recent meta-analysis (Wang 2016 – *Nutr Res*) indicating that introducing CFB before 4 months was associated with increased risk of overweight and obesity at 2-12 years.
- CFB introduction at age 4-5 months vs 6 months does not offer long-term advantages or disadvantages with regard to:
 - Growth, size, body composition, overweight or obesity
 - Iron status
 - Risk of food allergy, atopic dermatitis/eczema, or asthma during childhood
- Formula-fed infants may be at particular risk of excess energy intake when CFB are introduced early, as they appear to exhibit less self-regulation of energy intake than is observed among breastfed infants

DISCUSSION

Types and amounts of CFB & growth, size, body composition

- Growth and body composition were generally unrelated to intakes of meat, cereals or CFB differing in fat content or composition
 - Consistent with the conclusions of a recent umbrella review : no evidence to suggest associations between certain types or patterns of CFB and subsequent body composition, overweight, or obesity (Patro-Gołąb 2016 – *Obes Rev*).
 - Umbrella review also found no relationship between total fat or polyunsaturated fatty acid intake in the first years of life and these outcomes.
- Consumption of sugar-sweetened beverages is associated with an increased risk of obesity in childhood, but evidence is limited
- Juice intake is positively associated with infant weight-for-length and child BMI z-scores, but evidence is limited and most studies did not specify the type or percentage of fruit in the juice

DISCUSSION

Types and amounts of CFB & iron status

- Strong evidence showed that iron-rich or iron-fortified CFB (e.g., meats, iron-fortified cereals) can help maintain adequate iron stores or prevent iron deficiency during the first year of life among infants with insufficient iron stores or breastfed infants who are not receiving adequate iron from another source.
- Benefit for infants with sufficient iron stores (e.g., those consuming iron-fortified infant formula) is less evident.
- Consistent with recommendations of numerous authoritative organizations regarding the need for an adequate source of dietary iron after 6 months, when iron stores at birth may become depleted.
- Iron is particularly important for normal neurological development and immune function.

DISCUSSION

Types and amounts of CFB & zinc status

- Some evidence that CFB with substantial zinc (e.g., meats, cereals fortified with zinc) can support zinc status during the 1st year of life, particularly among breastfed infants not receiving adequate zinc from another source.
- Benefit less evident for infants consuming fortified infant formula.
- Zinc concentration in human milk declines sharply during lactation; by 6 months zinc intake from human milk is a very small proportion of the estimated requirements.
- Thus, both iron and zinc are considered “problem nutrients” for breastfed infants at 6-12 months
 - CFB nutrient densities (per 100 kcal of food) required for breastfed infants at 6-9 months are 9x higher for iron and 4x higher for zinc compared to the nutrient densities required for an adult male

DISCUSSION

Types and amounts of CFB & fatty acid status

- Moderate evidence indicates that CFB with differing fatty acid profiles, particularly long-chain polyunsaturated fatty acids, can influence fatty acid status.
- Particular attention to the fat content and composition of CFB is needed, because polyunsaturated fatty acids are key nutrients for brain development (most rapid from conception to age 24 months).

DISCUSSION

Types and amounts of CFB & food allergies and atopic allergic diseases

- Atopic diseases are relatively common in the US, and infancy may be a critical period for development of tolerance to food antigens
- Strong evidence: introducing peanut in the 1st year of life (after 4 months) may reduce risk of food allergy to peanuts; evidence is strongest for infants with highest risk, but also applicable to others
 - Conclusions consistent with other reviews
 - AAP now endorses introduction to peanut in 1st year of life
- Egg in the first year of life may also be beneficial
- Less strong evidence on early introduction of other foods containing common dietary antigens and prevention of allergies/atopic diseases
 - However, AAP states that there is no evidence that *delaying* introduction of allergenic foods (e.g., peanuts, eggs, fish) beyond 4-6 months prevents atopic disease.

SUMMARY:

Draft Evidence-Based Advice to USDA and HHS for Timing of Introduction of CFB

CFB should not be introduced to infants before 4 months of age. Introduction at age 4 to 5 months, as compared to 6 months, does not offer long-term advantages or disadvantages with regard to the outcomes reviewed.

- Infant feeding guidelines from authoritative sources in high-income countries generally recommend that CFB should be introduced at “about” or “around” 6 months, although some recommend an age range of 4 to 6 months
- Recommendations should ideally take into account the benefits and risks related to all relevant outcomes. The Committee’s reviews did not include:
 - Infant infectious diseases
 - Maternal outcomes that may be related to duration of exclusive breastfeeding (and, hence, age of introduction of CFB among breastfed infants)

SUMMARY:

Draft Evidence-Based Advice to USDA and HHS for Types and Amounts of CFB and Nutrient Status

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 the second 6 months of life among breastfed infants.

Provide CFB that contain adequate amounts of polyunsaturated fatty acids, given their critical role in brain development and the link between dietary intake and the child's fatty acid status. Although human milk is an important source of key fatty acids, milk concentrations are influenced by maternal dietary intake. Thus, both mother and child should consume diets adequate in these nutrients.

- Guidelines from several high-income countries emphasize the need for foods rich in iron and zinc, with some recommending that these be the first CFB introduced
- Canadian authorities emphasize that higher-fat CFB that are nutrient-rich are key components of a healthy diet under 2 years

SUMMARY:

Draft Evidence-Based Advice to USDA and HHS for Types and Amounts of CFB and Food Allergy and Atopic Diseases

Introduce peanut and egg in the first year of life, after CFB are introduced.

For other types of food allergy (to fish, shellfish, cow milk products, tree nuts, seeds, wheat, and soy), the evidence for protective effects is less clear, but the Committee found no evidence that avoiding such foods in the first year of life is beneficial with regard to preventing food allergies or other atopic or allergic diseases.

- Recent guidelines from high-income countries are generally consistent in recommending that introduction of potentially allergenic foods should not be delayed beyond the first year of life.

SUMMARY:

Draft Evidence-Based Advice to USDA and HHS for Sugar-Sweetened Beverages and Juice

Avoid consumption of sugar-sweetened beverages by children younger than age 2 years.

The evidence for avoiding/limiting juice intake by children younger than age 2 years is less clear.

- Consensus is widespread among authoritative bodies in high-income countries that SSB should not be consumed by children < 2 years, for several reasons:
 - The energy from SSB may displace energy from nutritious CFB, leading to nutrient gaps.
 - SSB consumption by infants and young children is related to risk of child overweight.
 - Intake of SSB in early life may set the stage for greater intake of SSB later in life.
- A consensus statement from four organizations recommended that juice not be given in the first year of life, and that no more than 4 ounces per day of 100% fruit juice should be consumed at ages 1 to 3 years.

SUMMARY:

Future Dietary Guidelines Advisory Committee Topics

- The 2020 Committee was asked to address several questions related to “what to feed” infants and young children. These represent only a portion of all the feeding questions that are relevant to infants and toddlers from birth to age 24 months.
- Questions of “how to feed” were not among the topics selected to be addressed by the 2020 Committee, but are of critical importance with regard to building healthy eating habits that can be maintained throughout life. These key issues should be taken up by the next Dietary Guidelines Advisory Committee.

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USDA/HHS Staff Who Supported this Chapter



Support Staff:

Cria Perrine

Jen Lerman

Kelley Scanlon

Eve Stoodly (DFO)

Julie Obbagy

Laural English

Darcy Güngör

Emily Madan

Sudha Venkatramanan

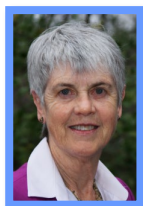
Nancy Terry

Gisela Butera

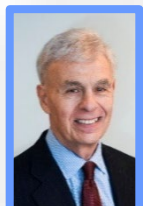
Anne Rodgers

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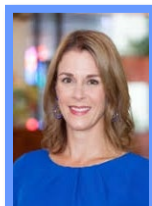
Barbara Schneeman, PhD
University of California-
Davis
Chair



Ronald Kleinman, MD*
Harvard Medical School
Vice Chair



Jamy Ard, MD
Wake Forest School of
Medicine



Regan Bailey, PhD, MPH, RD
Purdue University



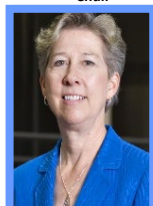
Lydia Bazzano, MD, PhD
Tulane University



Carol Boushey, PhD, MPH, RD
University of Hawaii



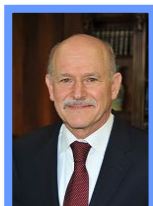
Teresa Davis, PhD
Baylor College of
Medicine



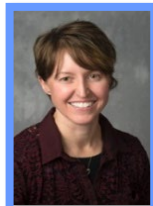
Kathryn Dewey, PhD
University of California-Davis



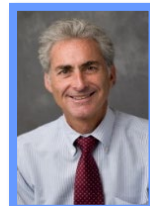
Sharon Donovan, PhD, RD
University of Illinois



Steven Heymsfield, MD
Louisiana State University



Heather Leidy, PhD
University of Texas



Richard Mattes, PhD, MPH, RD
Purdue University



Elizabeth Mayer-Davis, PhD, RD
University of North Carolina



Timothy Naimi, MD, MPH
Boston University



Rachel Novotny, PhD, RDN, LD
University of Hawaii



Joan Sabaté, DrPH, MD
Loma Linda University



Linda Snetselaar, PhD, RD
University of Iowa



Jamie Stang, PhD, MPH, RDN
University of Minnesota



Elsie Taveras, MD, MPH*
Harvard University



Linda Van Horn, PhD, RDN, LD
Northwestern University

*Massachusetts General Hospital

 Remote attendance

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