

# Complementary Feeding Interventions for Infants and Young Children Under Age 2

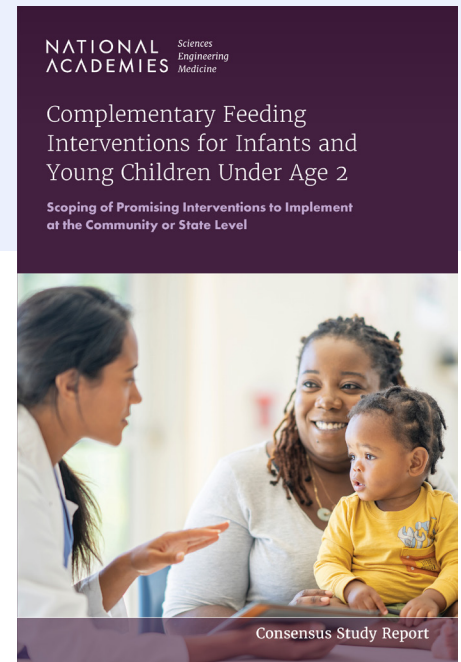
## Scoping of Promising Interventions to Implement at the Community or State Level

### BACKGROUND

Complementary feeding refers to the introduction of foods other than human milk or formula to an infant's diet. The World Health Organization and the American Academy of Pediatrics recommend that complementary feeding begin around 6 months of age, but not before 4 months of age. Around 6 months, human milk or formula alone may be insufficient to meet the nutritional needs of an infant. Healthy complementary feeding behaviors for infants and young children under 2 years are essential for age-appropriate growth and social, emotional, and cognitive development.

A 2020 National Academies of Sciences, Engineering, and Medicine (National Academies) consensus study report, *Feeding Infants and Children from Birth to 24 Months*, explored existing guidance on what and how to feed infants and young children. However, gaps in the literature include implementation of complementary feeding interventions outside of controlled clinical and research settings, interventions that could be implemented at the community or state level, and ways to complement existing federal-level programs.

In response to a request from the Centers for Disease Control and Prevention to identify promising complementary feeding interventions that could be implemented at the community or state level, the National Academies' Health and Medicine Division convened the Committee on Complementary Feeding Interventions for Infants and Young Children Under Age 2 to conduct a scoping review. This review includes assessment of peer-reviewed literature



and other publicly available information on interventions addressing what to feed (e.g., avoiding foods and beverages with added sugars; offering a variety of foods, textures, and flavors; consuming nutrient-dense foods) and how to feed (e.g., using hunger and satiation cues to guide feeding; repeated exposures to foods; utilizing other responsive feeding practices) infants and young children. The committee considered interventions that took place in the United States and other high-income country health care systems; early care and education settings; university cooperative extension programs; the Special Supplemental Nutrition Program for Women, Infants, and Children (WIC); home visiting programs; and other settings.

The resulting consensus study report, *Complementary Feeding Interventions for Infants and Young Children Under Age 2: Scoping of Promising Interventions to Implement at the Community or State Level*, assesses the evidence and provides information on interventions that could be scaled up or implemented at a community or state level.

## OVERVIEW OF INFORMATIVE STUDIES AND INTERVENTION ELEMENTS

While the committee did not find one specific intervention that could be scaled immediately in the United States, it identified three “informative studies” and six “informative intervention elements” that could positively impact the feeding behaviors and practices of infants and young children under 24 months.

### Informative Studies

- Infant Feeding Activity and Nutrition Trial (INFANT): Community-based cluster randomized controlled trial of an early intervention promoting healthy eating and active play, and in turn, healthy growth from the start of life. The intervention involved six 2-hour sessions targeting first-time parents; was led by a research dietitian; and included facilitated group discussions, peer support, interactive activities, take-home materials, exploration of barriers, and repeated text messages with educational materials.
- Intervention Nurses Start Infants Growing on Healthy Trajectories (INSIGHT): Randomized controlled trial

of an early life responsive parenting intervention to prevent rapid infant weight gain and childhood obesity. The target was first-time parents and the intervention involved four home visit sessions led by research nurses involving education and discussions on responsive parenting.

- Family Spirit Nurture: Randomized controlled trial of a brief home visiting intervention to reduce childhood obesity in Navajo children. The intervention involved six 45-minute lessons targeting Navajo mothers; was delivered via home visits led by Navajo paraprofessionals; and incorporated cultural teachings, hands-on activities, and exercises focused on goal setting and self-esteem.

### Informative Intervention Elements

- Repetition Counts utilized repeated exposure to increase vegetable consumption, suggesting the use of cycle menus in child care can provide repeated exposure in an existing program.
- EniM is an educational program for caregivers of infants in early care programs, suggesting that providing educational programs to parents, while providing infant care, is scalable.
- Grow2Gether is a social media intervention to improve caregiver feeding behavior, suggesting peer support and education via social media is feasible and acceptable.
- Early Childhood Obesity Prevention Program is an educational program delivered in 10- to 20-minute intervals over multiple home visits, suggesting ecological interventions in an existing home-visiting program are feasible, sustainable, and capable of wide dissemination.
- Early Food for Future Health is a web-based intervention providing videos and recipes, suggesting web-based interventions are scalable and ongoing “boosters” further increase effectiveness.

- SMS WIC Study is an interactive educational texting campaign within the WIC population, suggesting texting campaigns are highly implementable and acceptable low-cost interventions.

*See the report for further details on the informative studies and informative intervention elements listed above.*

## CONCLUSIONS

The committee concluded that no single system examined in the report—health care, early care and education, home visiting, and WIC—is currently equipped or adequately funded to reach all children up to age 2 years in the United States. Instead, the entire array of relevant settings and corresponding systems could be included in a comprehensive effort. The existing complementary feeding supports available for some families could be expanded and harmonized in ways that would allow all families with young children to benefit.

In addition, the effective scaling of any intervention requires the consideration of implementation science and equity principles. Securing permanent funding for program implementation; supporting personnel recruitment, training, and retention; and considering the integration of virtual options across settings are key for sustainability. Interventions that address the dietary habits of the whole family utilizing a life course approach may be best positioned to sustainably improve the dietary intakes of young children.

### Sector-Specific Conclusions

- **Health Care:** Interventions involving the U.S. health care system have the potential to reach nearly all young children and their parent or caretaker through regular visits. Expanding state Medicaid and Children’s Health Insurance Program coverage of counseling interventions provided by registered dietitians, psychologists, or social workers, augmented by community health workers or peer counselors, could reduce physician burden and improve intervention adherence, because these professionals and paraprofessionals may be able to operate more flexibly and spend more time with families than physicians.
- **Early Care and Education (ECE):** The Child and Adult Care Food Program (CACFP) and Early Head Start could be enhanced to translate interventions into ECE settings. Strategies that fund and support ECE providers of all types to adopt CACFP meal patterns, routinize the introduction of new healthy foods into the diets of children under 2 years, and incorporate parents into menu planning in a way that similar healthy foods are included in family meals would be well positioned to affect complementary feeding outcomes.
- **University Cooperative Extension (CE):** Intentional partnerships across settings, including CE, could improve nutrition education and training options for caregivers, early childhood educators, and paraprofessionals such as community health workers.
- **Special Supplemental Nutrition Program for Women, Infants, and Children (WIC):** Given WIC’s positive impact and reach to the U.S. low-income population, WIC’s nutrition education and nutrition support could be expanded to otherwise eligible individuals of all income levels. Additionally, in some situations, locating WIC services in health care settings could allow for optimal co-location of services and enhanced staffing of registered dietitians, social workers, or psychologists in clinical settings.
- **Home Visiting:** Other U.S. systems could collaborate with home visiting programs to develop, distribute, and provide training on interactive “what to feed” and “how to feed” modules. Expanding referrals to home visiting programs from multiple sectors (including the medical, ECE, and WIC settings) could improve programs’ reach and potential impact on child health outcomes.

### Additional Conclusions and Considerations

The committee also identified the need for strengthening collaboration across sectors through evaluation, quality improvement, workforce support, and more; collection and application of standardized outcome measures; reaching underserved populations through partnership

and community engagement using flexible adaptation; assessing and addressing food insecurity when implementing complementary feeding interventions; further study of mass media campaigns and counter-marketing directed to families with young children; and adapting interventions to the nutrition literacy of caregivers and professionals.

#### **MOVING FORWARD**

Because healthy eating behaviors are established early in life, the implementation and sustainment of large-

scale, effective infant and young child feeding programs across the settings examined in the report would help provide a strong foundation for population health. Public and private sector and intergovernmental collaboration on workforce development, internet and technology infrastructure, evaluation and program improvement, and efforts to increase funding levels and reimbursement for interventions will be crucial to achieving this goal.

Access the full report at [www.nationalacademies.org/complementary-feeding-interventions](http://www.nationalacademies.org/complementary-feeding-interventions).

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#### **FOR MORE INFORMATION**

This Consensus Study Report Highlights was prepared by National Academies' staff based on the Consensus Study Report *Complementary Feeding Interventions for Infants and Young Children Under Age 2: Scoping of Promising Interventions to Implement at the Community or State Level* (2023).

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#### **Health and Medicine Division**

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