**Healthy Eating Research:**
***Building Evidence to Prevent Childhood Obesity***

Robert Wood Johnson Foundation

# Feeding Guidelines for Infants and Young Toddlers: A Responsive Parenting Approach

Early Care and Education Working Group webinar, March 20, 2017

# Expert Panel Leadership

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# Expert Panel Members

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# Why These Guidelines?

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- Early life feeding behaviors play a central role in establishing food preferences
- Prevalence of unhealthy eating patterns and weight outcomes among U.S. infants and toddlers
- Previous comprehensive guidelines are dated

# Presentation Outline

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- **Infant/toddler feeding patterns**
- **Infant/toddler obesity patterns**
- **Responsive parenting framework**
- **Responsive feeding**
- **Feeding Guidelines**
- **Research recommendations**

# Infant/Toddler Dietary Patterns: A Cause for Concern

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- **FITS study showed that the dietary patterns of U.S. infants and toddlers are especially concerning.**
  - low rates of exclusive breastfeeding
  - short breastfeeding durations
  - introduction of solid foods before 4 months of age
  - infrequent consumption of green leafy and yellow vegetables
  - under-consumption of foods rich in fiber
  - excessive consumption of calories, added sugars and sodium.

Siega-Riz et al. (2010); Butte et al. (2010)

# Dietary Patterns are Set Very Early in Life

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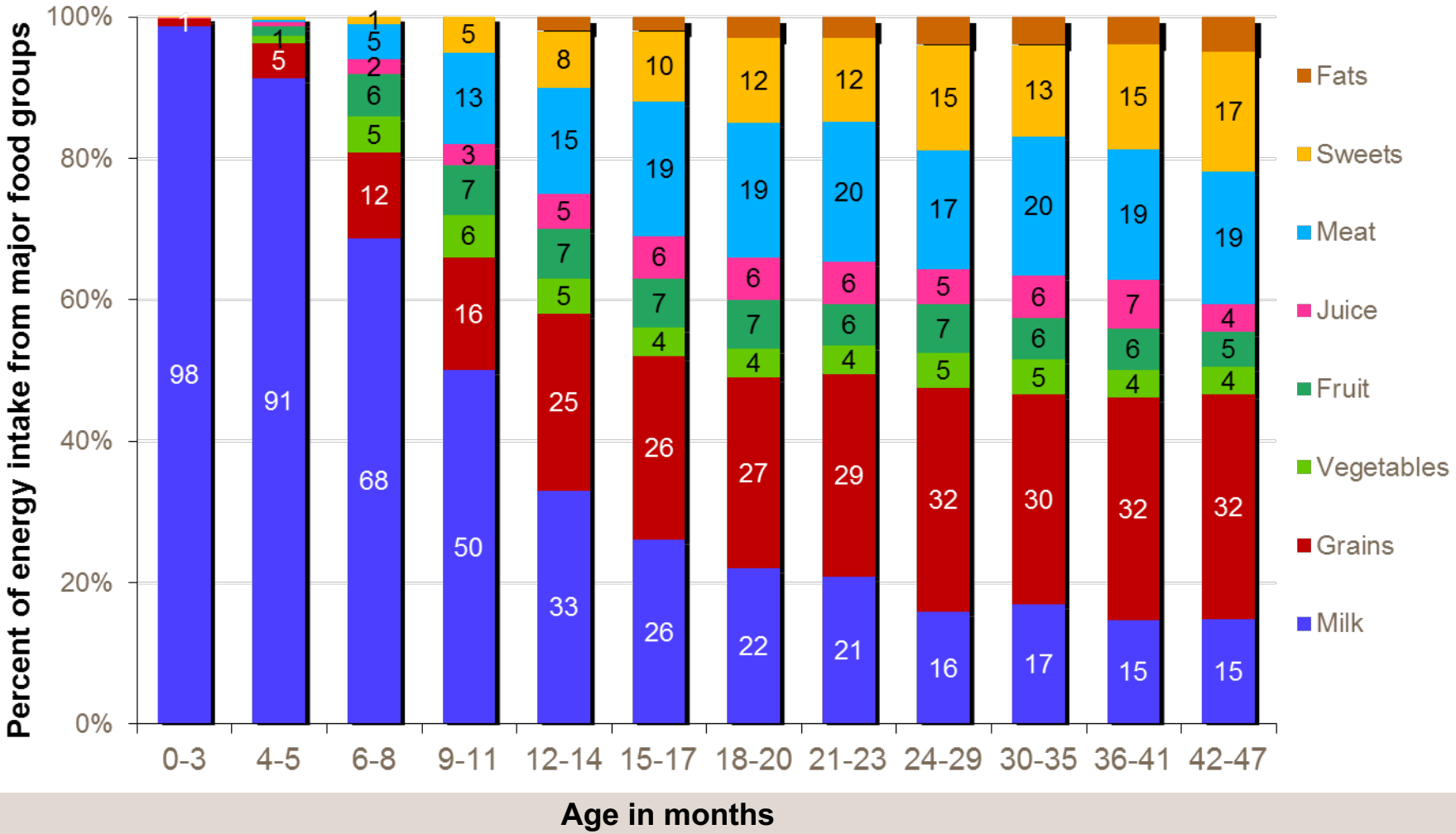


Deming DM, Reidy KC, Briefel RR, Fox MK, Condon E. The Feeding Infants and Toddlers Study (FITS) 2008: Dramatic changes in the amount and quality of vegetables in the diet occur afer the first year of life. The FASEB J. 2012; (abstr).

# Very Low Fruit & Vegetable Intake

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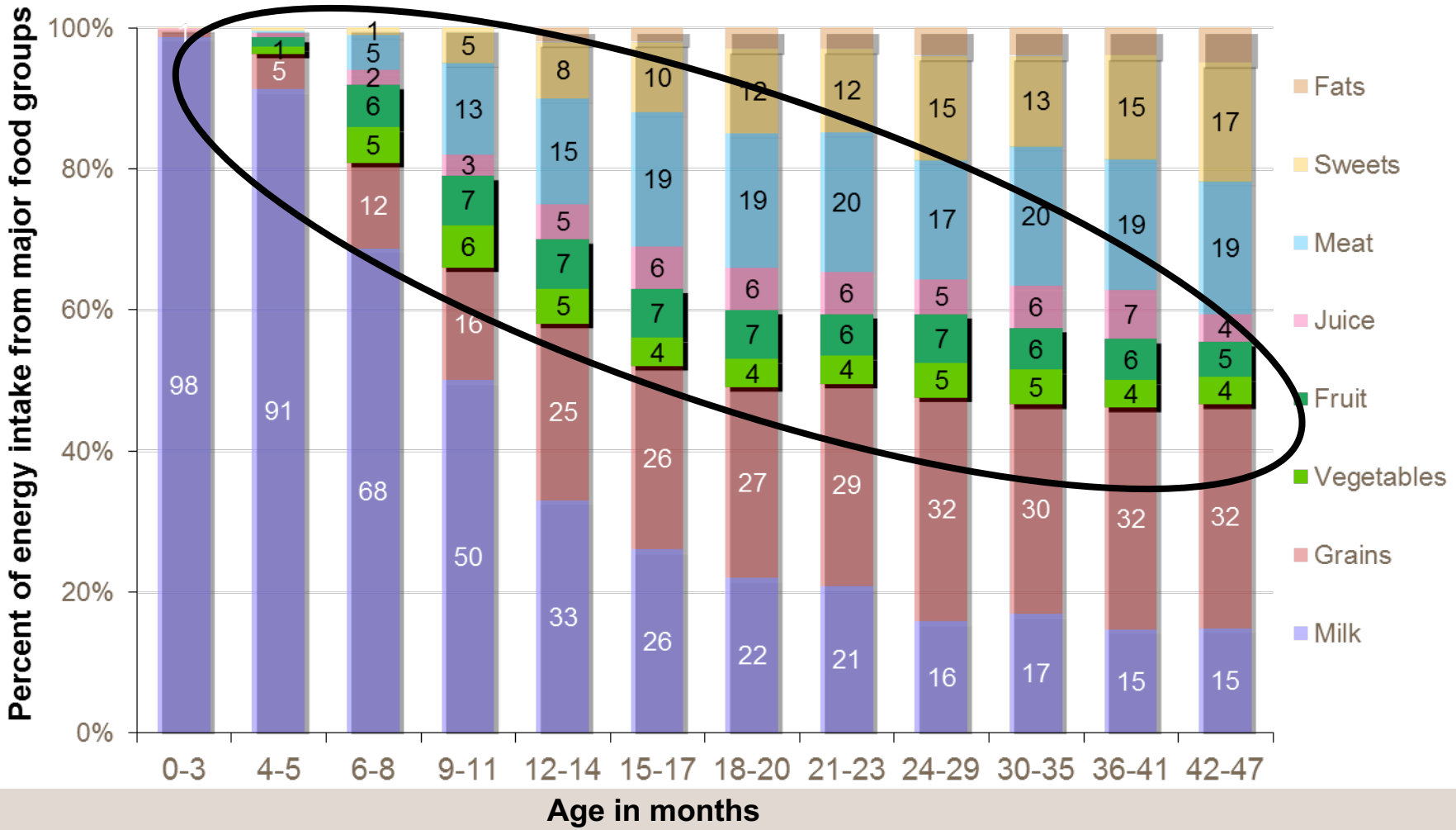


Deming DM, Reidy KC, Briefel RR, Fox MK, Condon E. The Feeding Infants and Toddlers Study (FITS) 2008: Dramatic changes in the amount and quality of vegetables in the diet occur afer the first year of life. The FASEB J. 2012; (abstr).

# Breastfeeding Disparities & Low Exclusive Breastfeeding Rates

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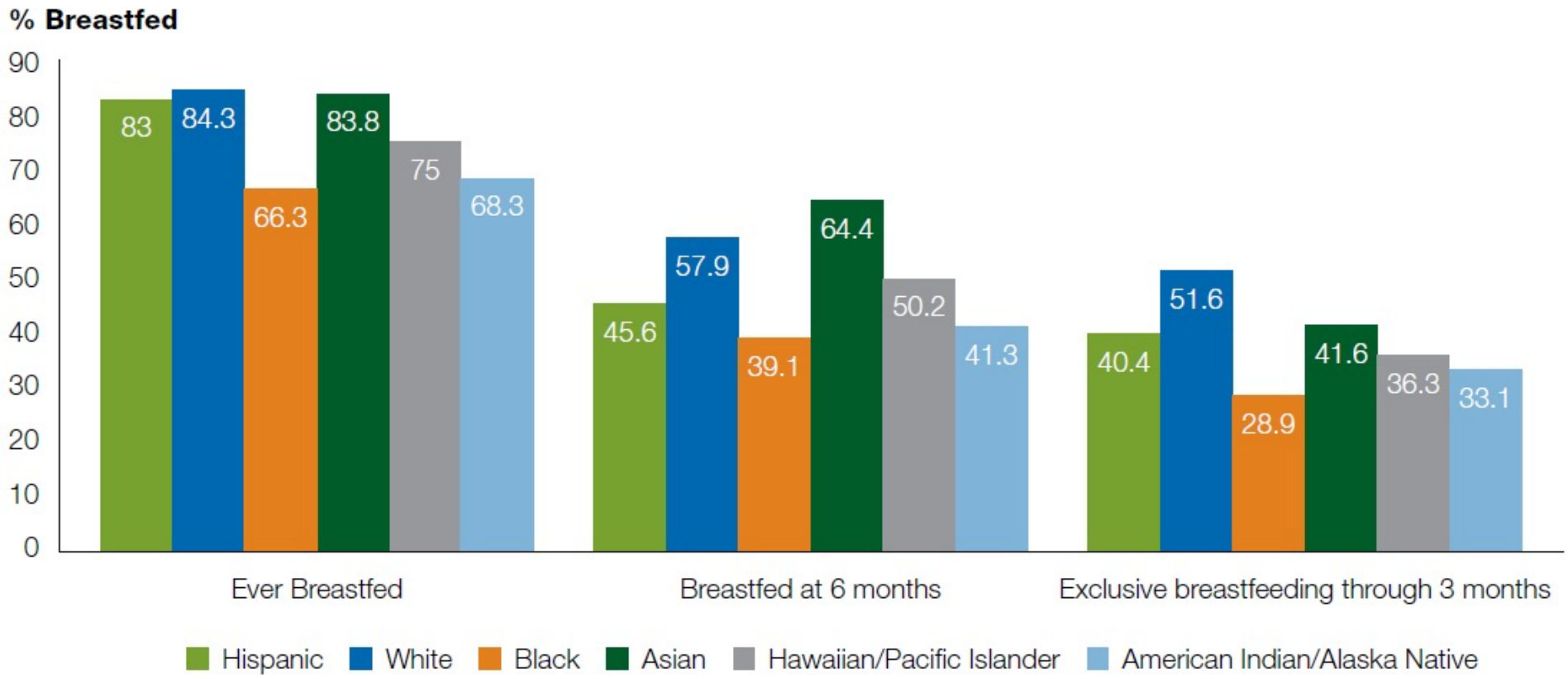
Figure 4. Breastfeeding outcomes across U.S. ethnic/racial groups for children born in 2013




Note: Data from Centers for Disease Control and Prevention (CDC) National Immunization Survey (NIS).[41]

# Excessive Weight Among 0-2 Year Olds & Associations with Sex, Race/Ethnicity

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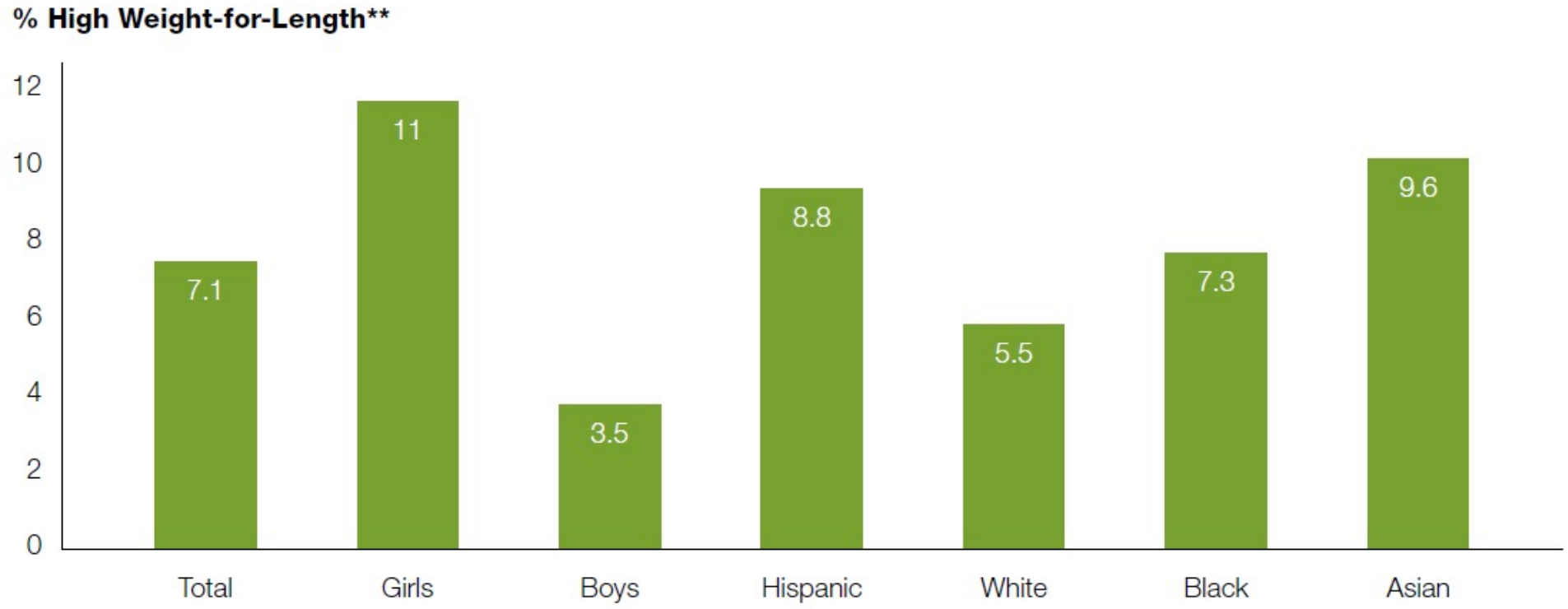
Figure 3. High weight-for-recumbent length among U.S. infants and toddlers, birth to two years of age




Note: Data from the 2011-2012 National Health and Nutrition Examination Survey (NHANES). Adapted from Ogden et al. (2014).[40]

** High Weight-for-Length defined as Weight-for-Length ≥ 97.7th percentile of WHO 2006 growth charts.

# Obesity Prevention Needs to Start Even Before the Offspring is Conceived

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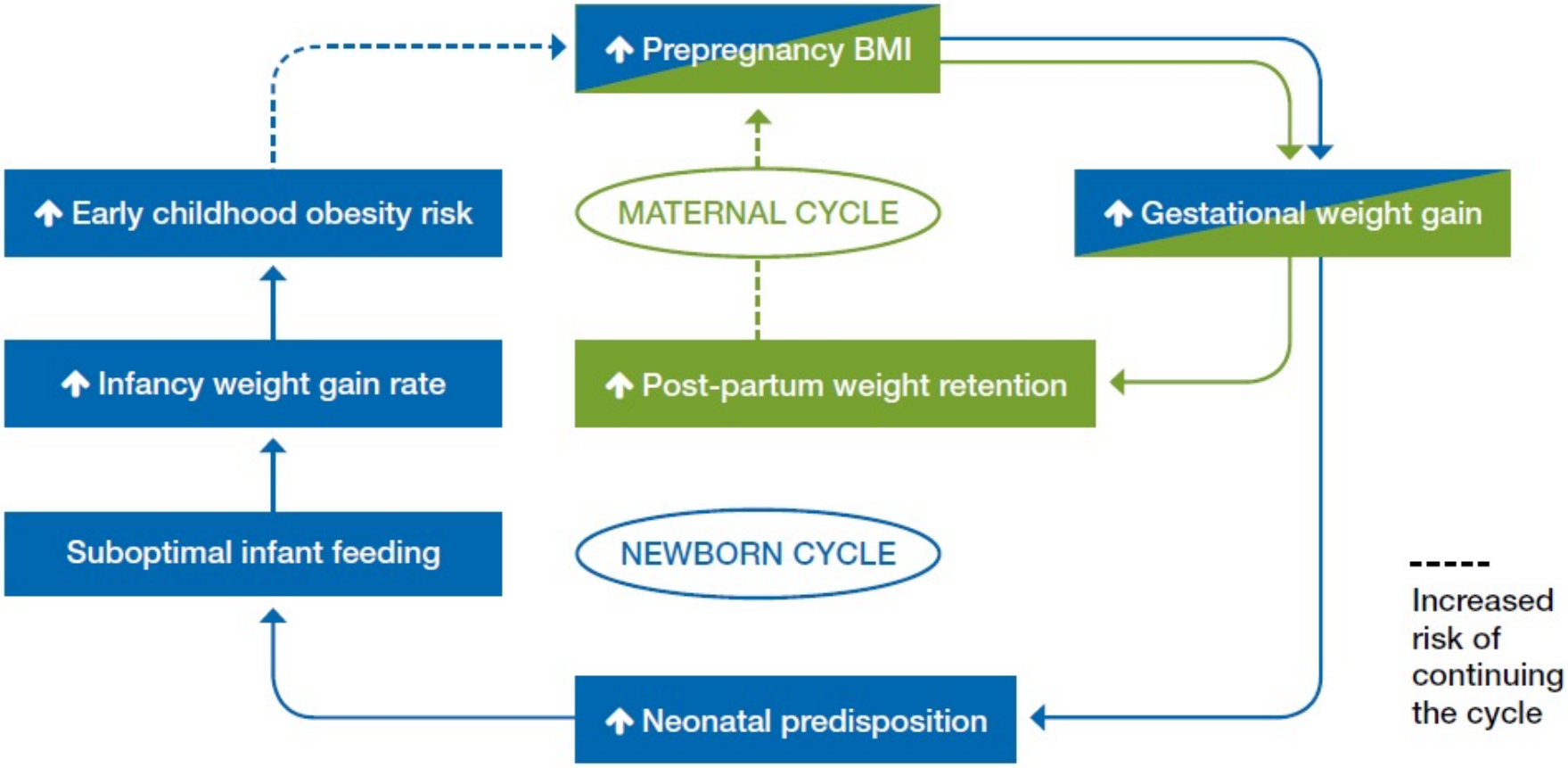
Figure 1. Maternal-child life-course obesity framework




Note: From "Early life nutrition disparities: Where the problem begins?" by R. Pérez-Escamilla and O. Bermudez, 2012, *Adv Nutr*, 3, p. 72.[13] Reprinted with permission from author.

# Key Guidelines' Audience

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- **Parents and caregivers**
- **Health professionals**
  - Nurses, OBGYN's, Pediatricians, etc…
- **Food assistance programs**
  - Special Supplemental Nutrition Program for Women, Infants, and Children (WIC)
- **Early childhood care centers**

# Guidelines Development Process

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1. Review of key studies on topics identified as crucial, including how children learn to eat
2. Review of responsive feeding randomized control trials
3. Review of infant and toddler feeding guidelines from diverse countries including the U.S.
4. Interviews with experts in the field, including academic researchers and maternal-child health program delivery/evaluation professionals
5. Development of messages on what and how to feed infants and toddlers following an expert panel consensus process methodology

# Guidelines Content & Approach

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## Age Groups

- 0 to ~6 months
- ~6 to 12 months
- 12 to 24 months

## Approach

- Responsive parenting
  - Responsive feeding

## Themes

- Breastfeeding, infant formula, cow's milk
- Complementary feeding (solids)
- Beverages
- Transition to family meals
- Soothing & sleep
- Play/physical activity
- Screen time
- Food allergies
- Food safety

# What is Responsive Parenting?

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**Responsive Parenting is a parenting style that is meant to foster the development of self-regulation and promote cognitive, social, and emotional development.**

**Self-regulation includes overlapping constructs that can affect feeding behaviors, including:**

- self-control
- will power
- effortful control
- delay of gratification
- emotional regulation
- executive function
- inhibitory control

# Responsive Parenting Framework

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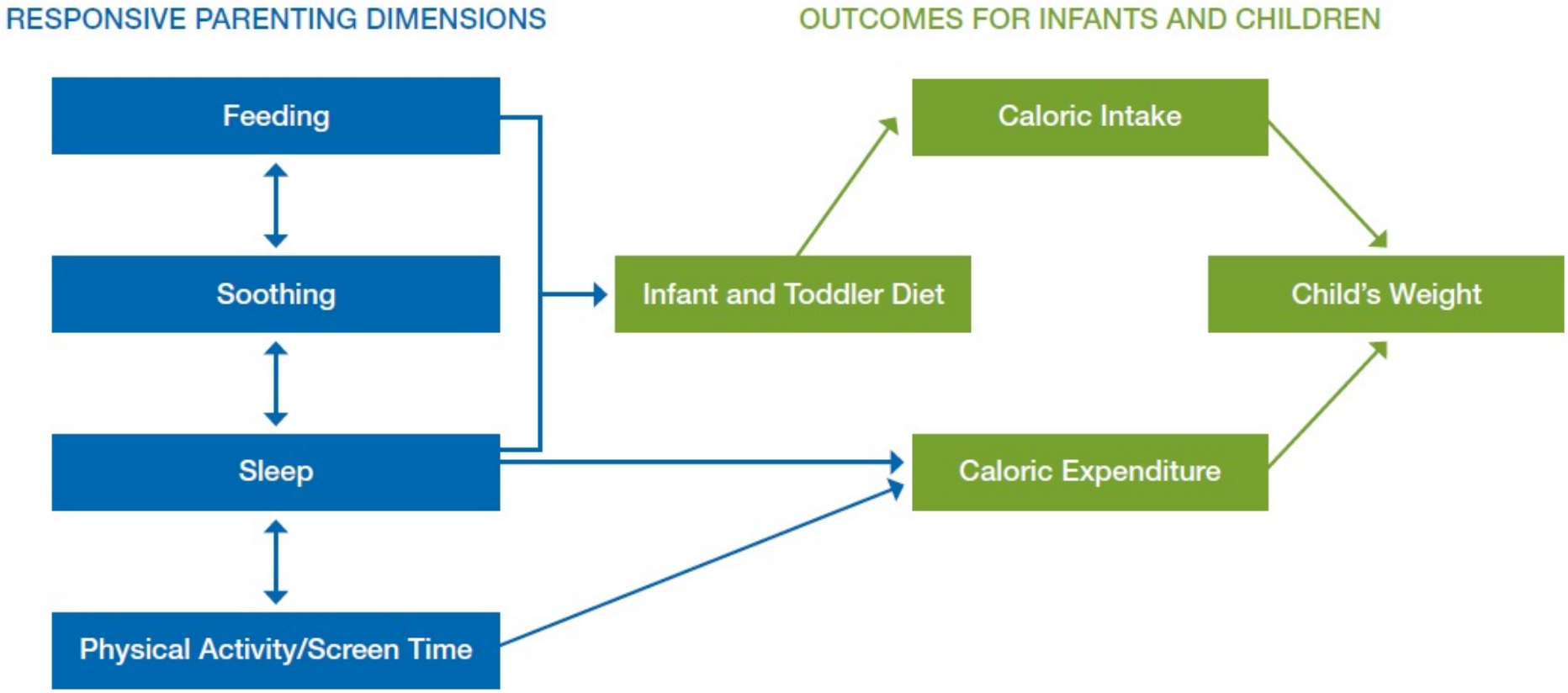


Note: Original figure developed by authors of this report.

# What is Responsive Feeding

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**Responsive Feeding is a key dimension of responsive parenting involving reciprocity between the child and caregiver during the feeding process.**

**It is grounded upon the following three steps:**

1) the child signals hunger and satiety through motor actions, facial expressions, or vocalizations;
2) the caregiver recognizes the cues and responds promptly in a manner that is emotionally supportive, contingent on the signal, and developmentally appropriate; and
3) the child experiences a predictable response to signals.

# Responsive Feeding Framework

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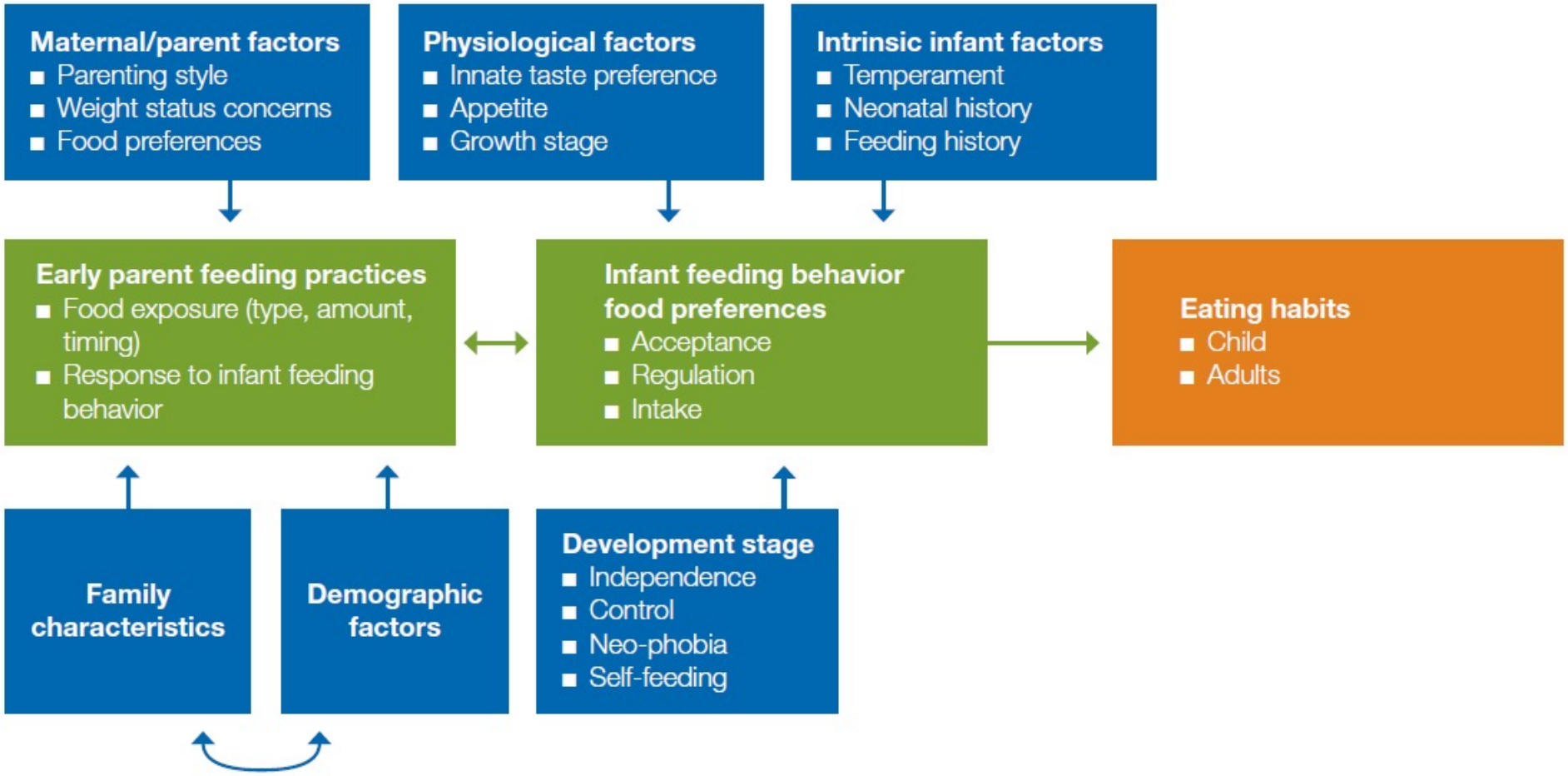
Figure 5. Key factors that influence the reciprocal relationships between parent feeding practices and infant feeding




Note: Reproduced with permission from "The NOURISH randomised control trial: Positive feeding practices and food preferences in early childhood - a primary prevention program for childhood obesity," by L.A. Daniels, A. Magarey, D. Battistutta et al., 2009, *BMC Public Health*.[77] License at *http://creativecommons.org/licenses/by/2.0*.

# The First 6 Months

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## Breastfeeding

- The AAP recommends that infants be breastfed exclusively from birth until about 6 months.
- Once complementary foods are introduced, it is recommended that breastfeeding continues until the child is at least 1 year old.

**The AAP recommends that infants be introduced to complementary foods when they are developmentally ready, which usually happens between 5 and 6 months of age.**

No introduction of solids before 4 months of age

Source: AAP 2013

# How to Tell When a Baby is Ready to be Introduced to Complementary Foods?

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## Key Developmental Milestones

- Sits without support and has good head and neck control
- Munches or chews and uses the tongue to move pureed foods to the back of the mouth for swallowing
- No longer has extrusion reflex
- Brings hands and toys to the mouth for exploration
- Indicates a desire for food (e.g., eagerness to participate in family mealtimes, trying to grab food to put in her/his mouth)

# Hunger & Satiety Signals

| Age | Hunger Signals | Satiety signals |
|---|---|---|
| Birth through 5 months | ■ Wakes and tosses<br>■ Sucks on fist<br>■ Cries or fusses<br>■ Opens mouth while feeding to indicate wanting more | ■ Seals lips together<br>■ Turns head away<br>■ Decreases or stops sucking<br>■ Spits out the nipple or falls asleep when full |
| 4 through 6 months | ■ Cries or fusses<br>■ Smiles, gazes at caregiver, or coos during feeding to indicate wanting more<br>■ Moves head toward spoon or tries to swipe food towards mouth | ■ Decreases rate of sucking or stops sucking when full<br>■ Spits out the nipple<br>■ Turns head away<br>■ May be distracted or pays more attention to surroundings |
| 5 through 9 months | ■ Reaches for spoon or food<br>■ Points to food | ■ Eating slows down<br>■ Pushes food away |
| 8 through 11 months | ■ Reaches for food<br>■ Points to food<br>■ Gets excited when food is presented | ■ Clenches mouth shut or pushes food away |
| 10 through 12 months | ■ Expresses desire for specific food with words or sounds | ■ Shakes head to say “no more” |
| 1 to 2 years | ■ Combines phrases with gestures such as “want that” and pointing<br>■ Can lead parent to refrigerator and point to a desired food or drink | ■ Uses words like “all done” and “get down”<br>■ Plays with food or throws food when full |

# 6 to 12 Months

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- **Breast milk or formula continues to be the most important source of nourishment**
- **Nutrient contribution from a variety of healthful complementary foods should increase with age**
  - Offer a variety of vegetables and fruits and avoid foods of limited nutritional value.
  - Solid foods rich in iron and zinc are important for exclusively breastfed babies.
  - Gradually transition from pureed or mashed food to lumpy and soft finger food (6-8 months), to chopped food and hard finger food (8-12 months).

# How Children Learn to Like Healthy Foods

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- **Maternal diet during pregnancy and lactation**
  - Flavors passed through amniotic fluid and breast milk
- **Associative learning**
- **Observation of caregivers' eating behaviors**
- **Repeated exposure**
  - May take as many as 20 tries for some veggies to be accepted

# 12 to 24 Months

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- **Focus on increasing dietary diversity**
  - Variety of fruits and vegetables, lean proteins, and whole grain foods
- **Developmentally appropriate portion sizes**
- **Cow's milk**
  - AAP recommends pasteurized whole milk with no added sugars
- **Foods to avoid or limit: SSBs, fruit juice, added sugars, high sodium, trans fats**

# Responsive Parenting/Feeding Works!

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## Responsive Parenting/Feeding Randomized ControlTrials

- SLIMTIME (Paul et al. 2011) - U.S.
- INSIGHT (Savage et al. 2016, Paul et al. 2016) – U.S.
- NOURISH (Daniels et al. 2012, 2015) - Australia
- Healthy Beginnings (Wen et al. 2012) - Australia
- Prevention of Overweight in Infancy (Fangupo et al. 2015) – New Zealand

## Responsive Parenting/Feeding Works!

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- All studies found impacts on desirable caregivers' responsive parenting/feeding behaviors and four trials found improvements in weight outcomes at 1 to 2 years of age.

## Responsive Parenting/Feeding Works!

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- The RCTs indicate that teaching parents to correctly interpret infant hunger and satiety cues is key for allowing the child to learn to self-regulate food intake properly.
  - Anticipatory guidance
- Also important for caregivers to understand the sleeping patterns of infants and how rapidly they evolve during the first year of life.

## Responsive Parenting/Feeding Works!

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- RCTs consistently emphasized the importance of allowing the infant and toddler to participate in family meals, and to avoid distractions during meal times.
  - Meal times should be a pleasant experience with plenty of verbal and non-verbal interactions between the caregiver and the child.

# Responsive Parenting/Feeding Works!

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- Responsive parenting/feeding trials that included soothing and/or sleeping components were successful at improving sleeping patterns and feeding behaviors, especially at night.
- Trials highlight the need to respond to infant crying and distress with feedings only when the infant is hungry.
    - They also discourage the use food as a reward as this will condition the infant to expect to be fed when waking up or in distress even when not hungry.

# Guidelines Implementation: Systems Changes Needed

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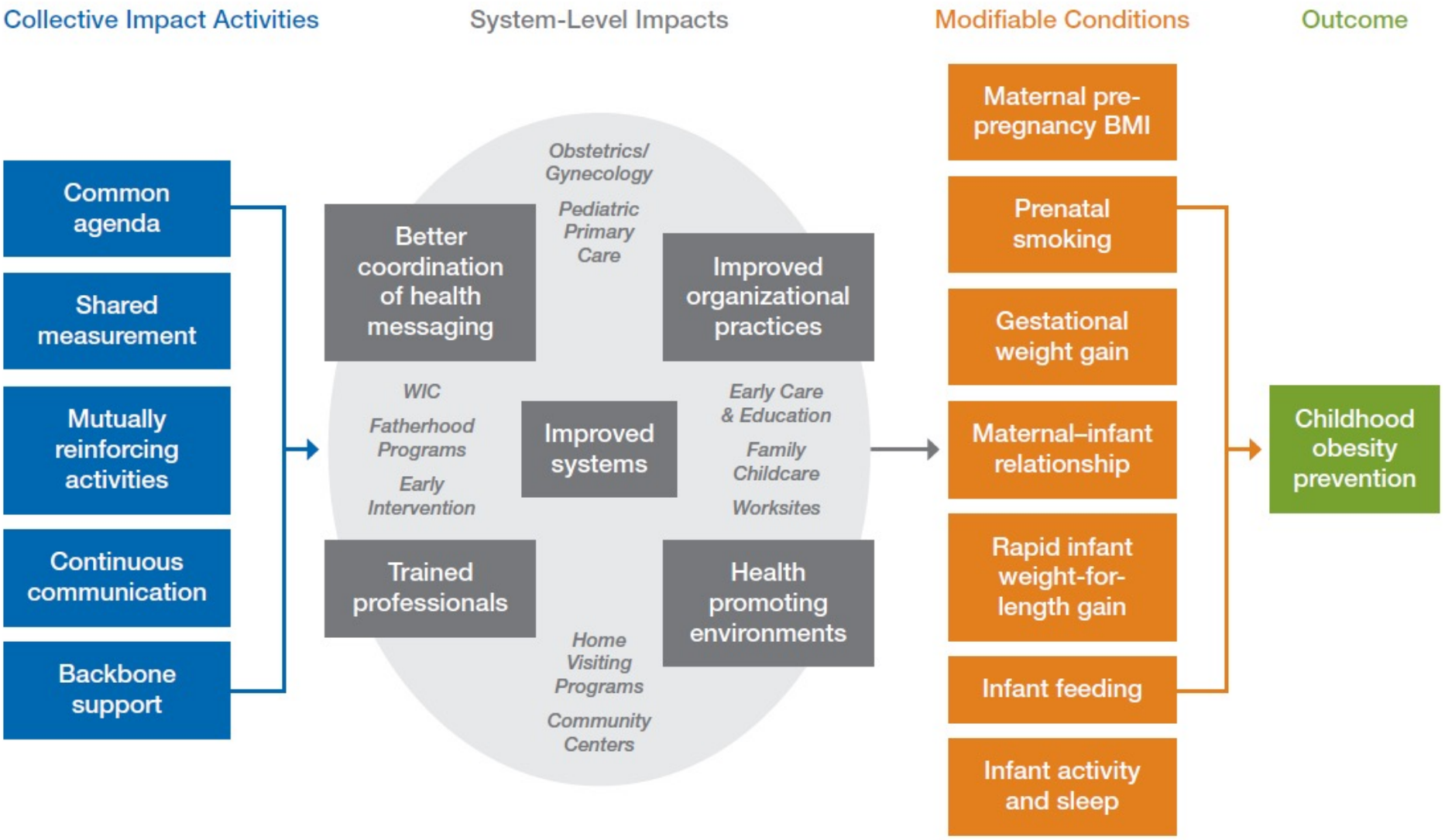


Note: Reproduced from "Interventions for childhood obesity in the first 1,000 days a systematic review," by T.L. Blake-Lamb et al., 2016, Am J Prev Med, 50, p.786.[80]

# Research Recommendations

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- **Conduct responsive infant/toddler feeding studies among low socioeconomic and ethnic/racial minority groups in the United States, as they have been seriously underrepresented in responsive feeding research.**
  - Studies should help understand how best to support families with low incomes in implementing the RWJF HER responsive infant and toddler feeding guidelines.

# Research Recommendations

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- **Conduct studies to determine ideal mode or combination of modes of delivery of education and support on the RWJF HER infant/toddler feeding guidelines to parents and child-care providers**
  - WIC, health care, CACFP, home health care workers, promotoras, etc.

# Research Recommendations

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- **Conduct systems studies to find out how best to achieve intersectional coordination to provide the right environments for caregivers of infants and toddlers to implement the RWJF HER responsive parenting/feeding guidelines.**

# How to Access Report

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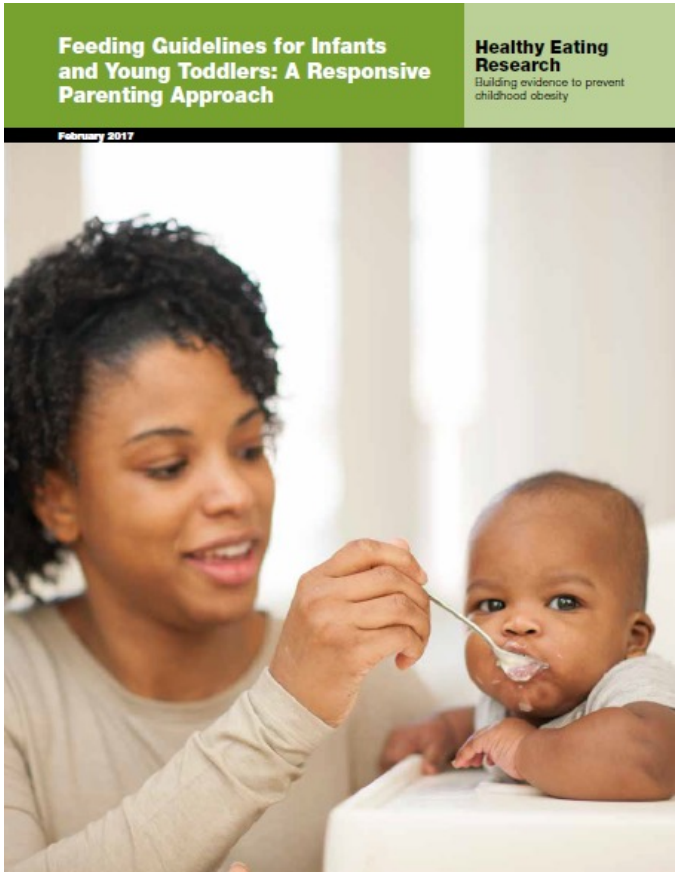
**The Full Report and Executive Summary are available on the Healthy Eating Research website**

***http://healthyeatingresearch.org***

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# Thank you!

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