

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



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

March 7, 2017

Expert Panel Leadership



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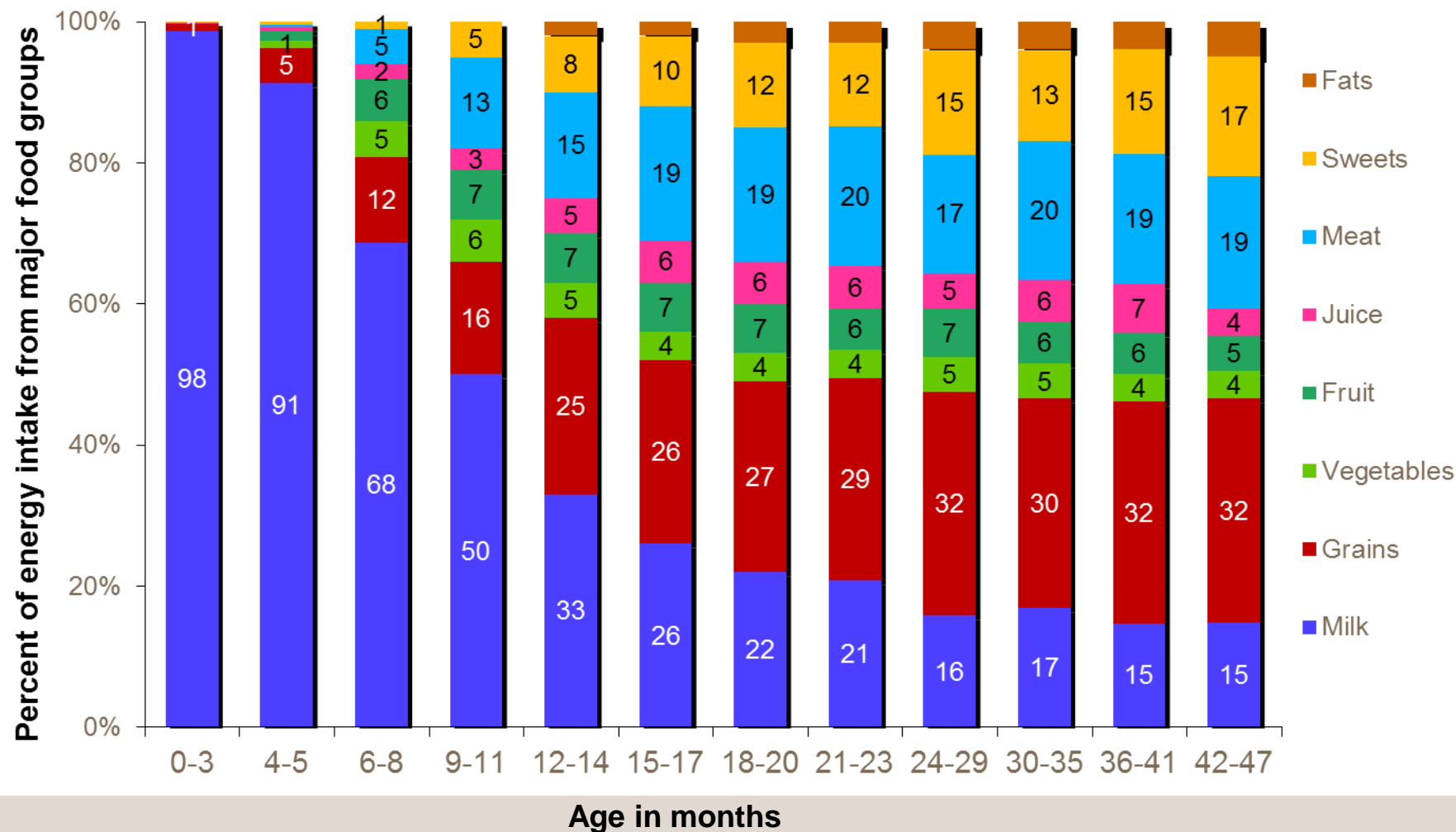
Why These Guidelines?

- **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**



Dietary Patterns are Set Very Early in Life

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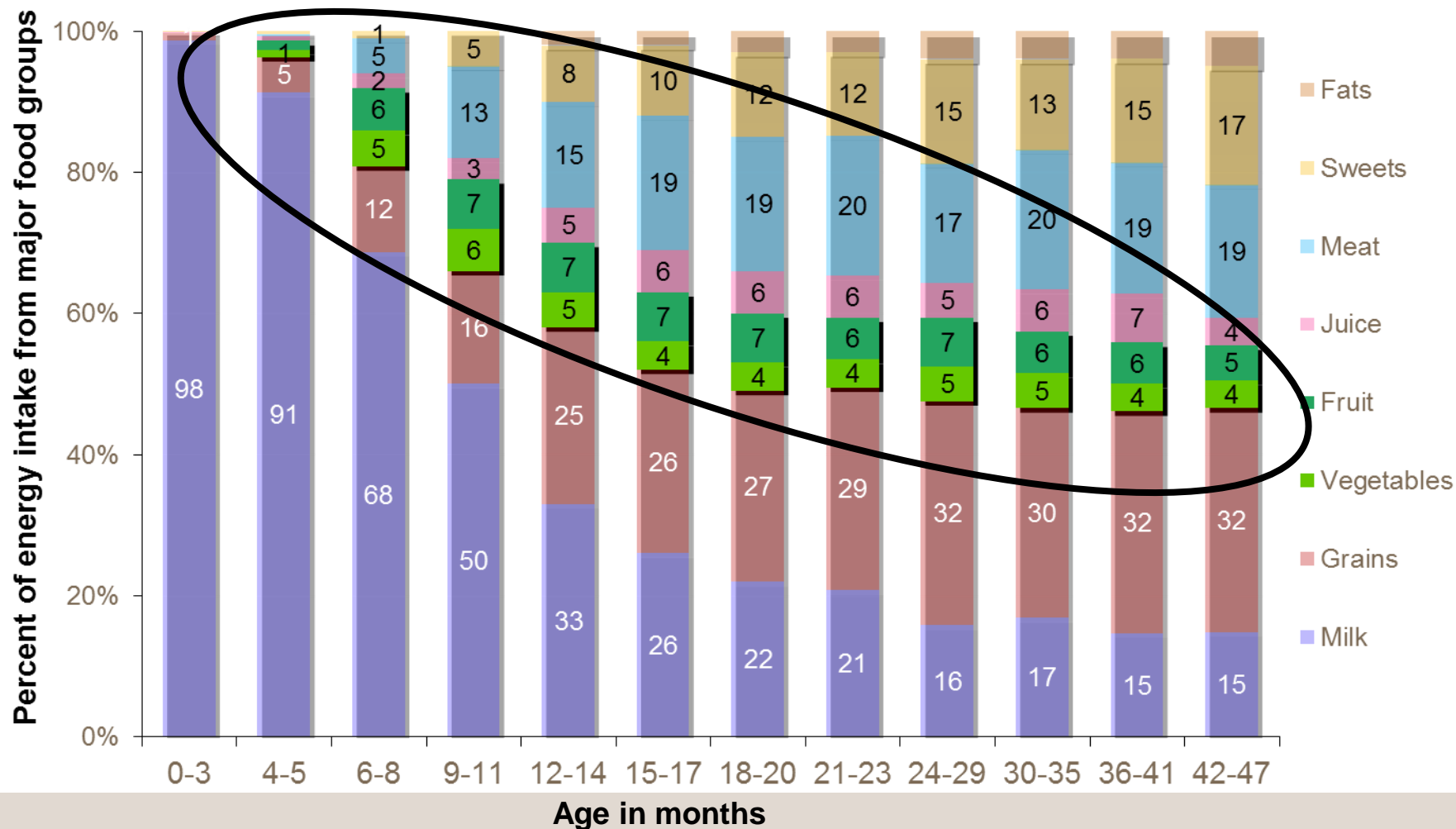


Deming DM, Reidy KC, Briefel RR, Fox MK, Condon E. The Feeding Infants and Toddlers Study (FITS) 2008: Dramatic changes in the amount and quality of vegetables in the diet occur after the first year of life. The FASEB J. 2012; (abstr).



Very Low Fruit & Vegetable Intake

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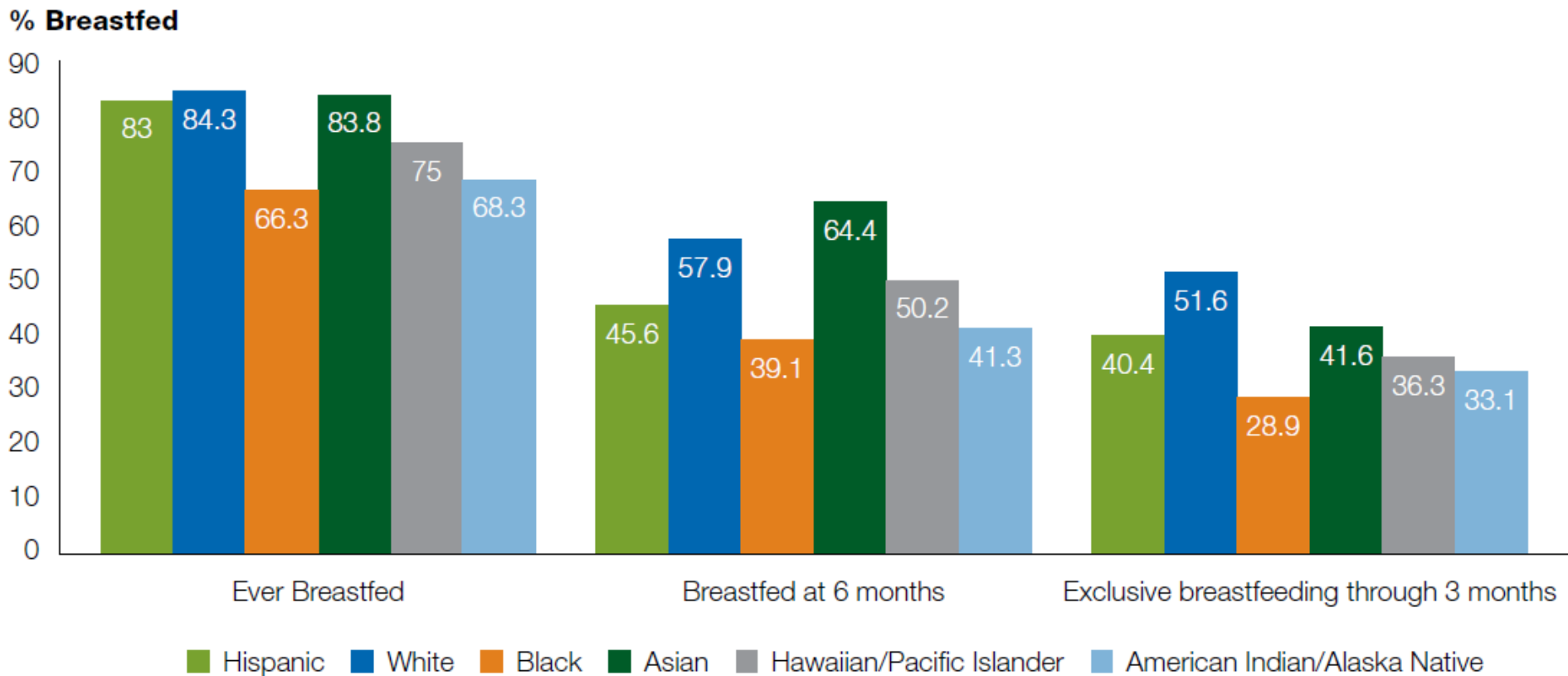
Deming DM, Reidy KC, Briefel RR, Fox MK, Condon E. The Feeding Infants and Toddlers Study (FITS) 2008: Dramatic changes in the amount and quality of vegetables in the diet occur after the first year of life. The FASEB J. 2012; (abstr).

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

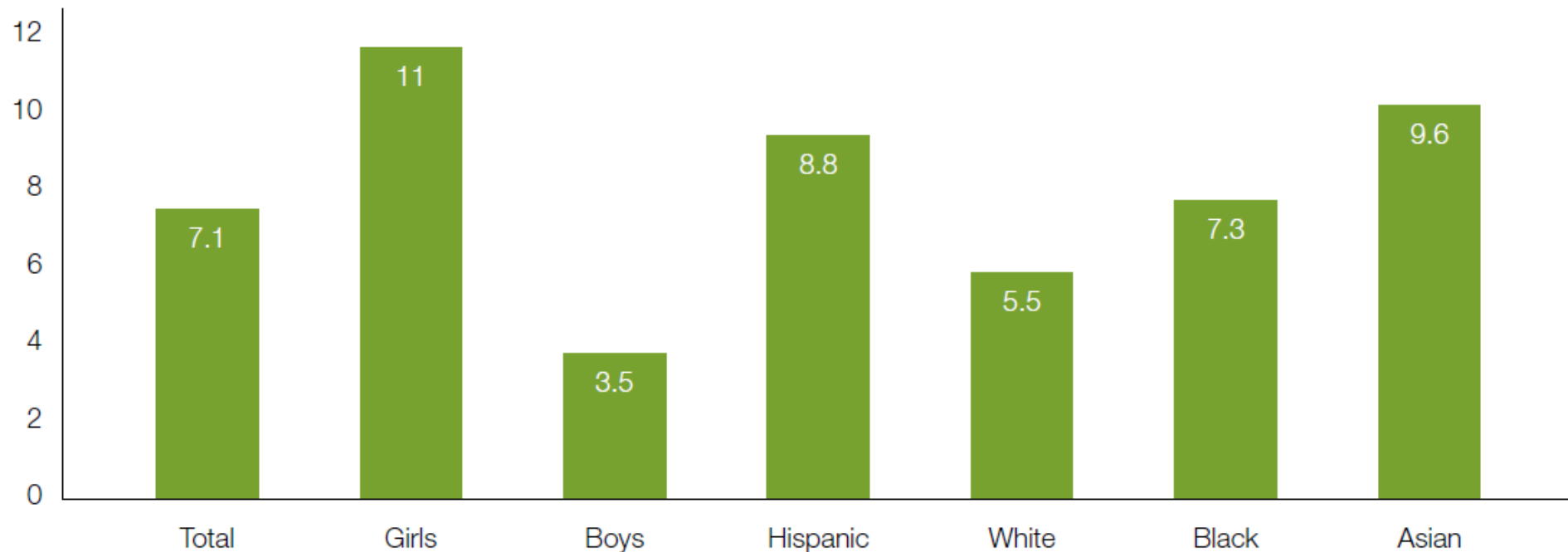
Excessive Weight Among 0-2 Year Olds & Associations with Sex, Race/Ethnicity



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

% High Weight-for-Length**



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

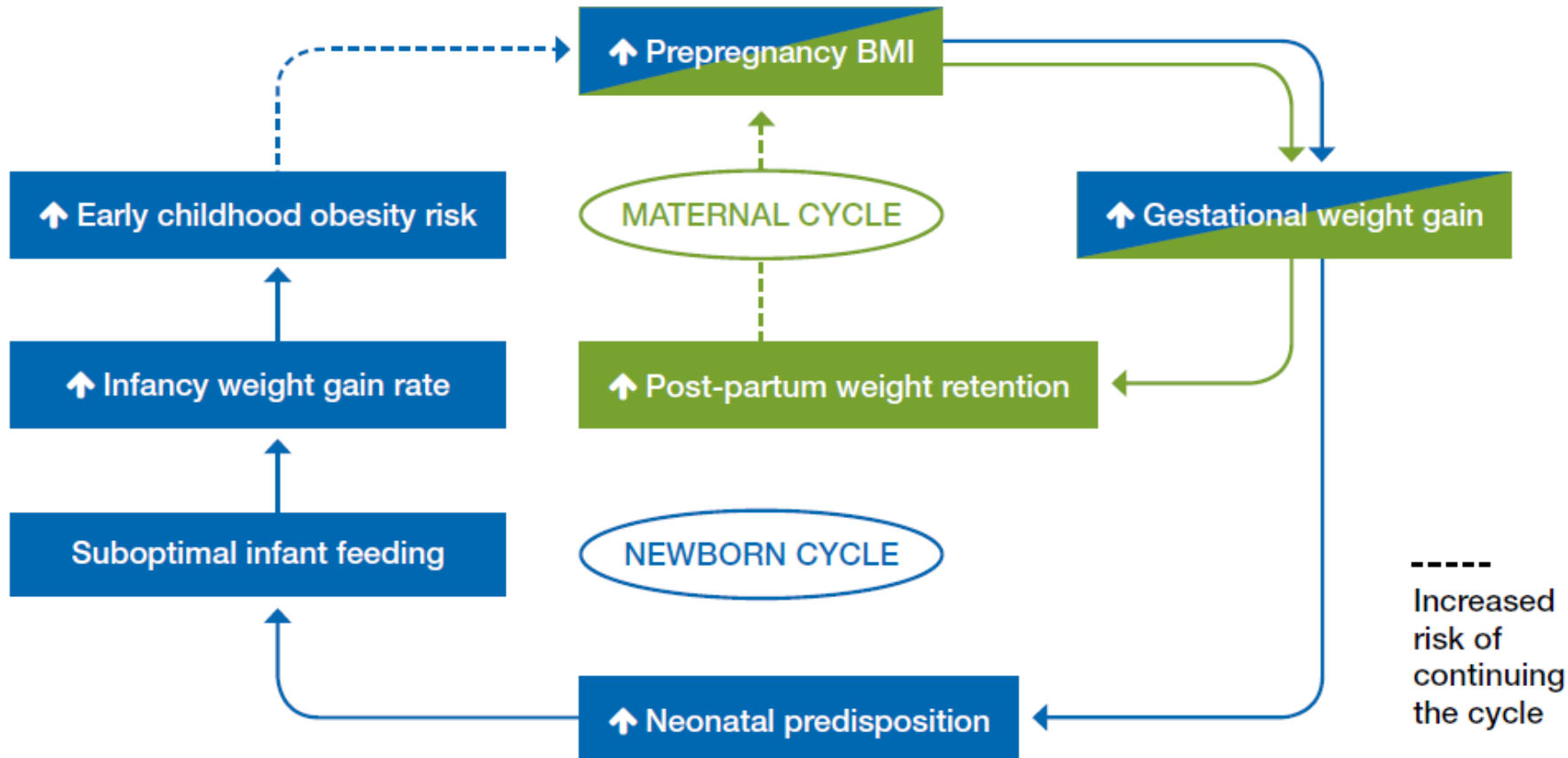
** High Weight-for-Length defined as Weight-for-Length \geq 97.7th percentile of WHO 2006 growth charts.

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

- **Parents and caregivers**
- **Health professionals**
 - Nurses, OBGYNs, Pediatricians, etc...
- **Food assistance programs**
 - Special Supplemental Nutrition Program for Women, Infants, and Children (WIC)
- **Early care and education 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?

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:

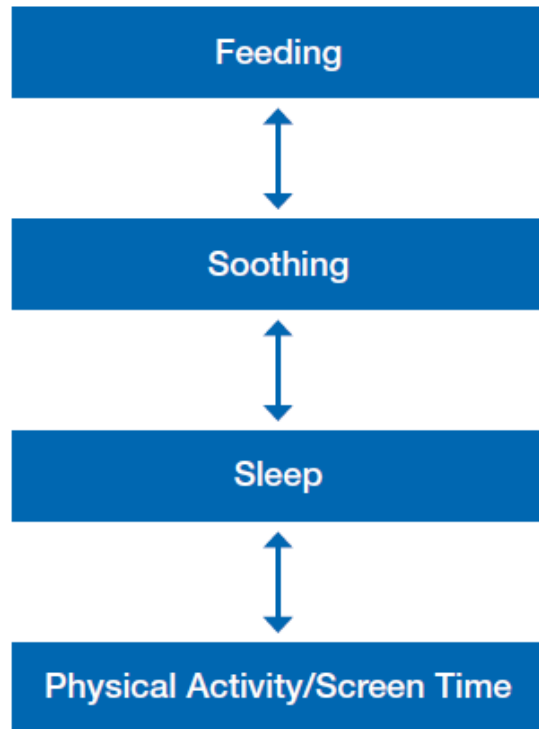
- self-control
- will power
- effortful control
- delay of gratification
- emotional regulation
- executive function
- inhibitory control

Responsive Parenting Framework

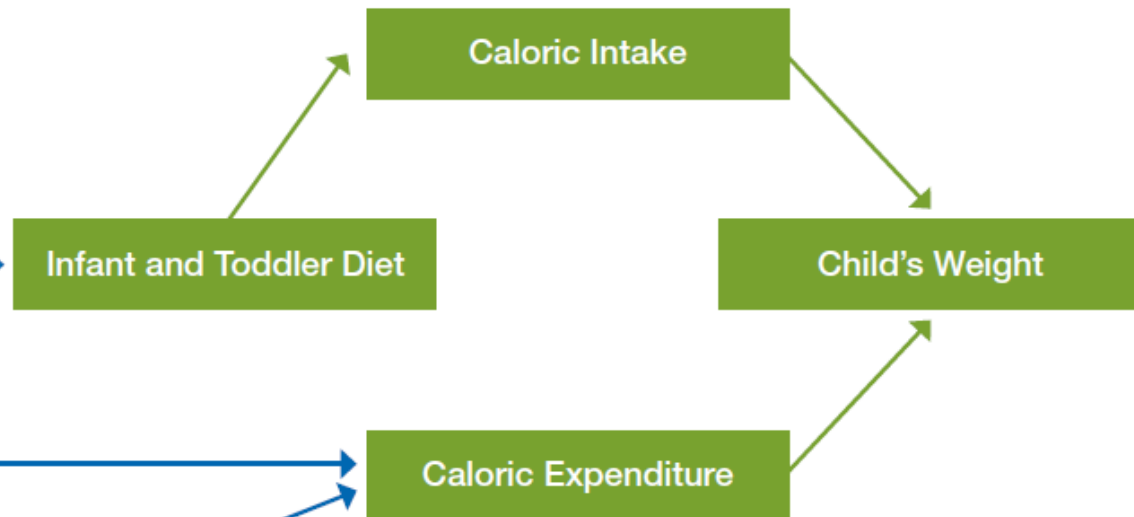


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RESPONSIVE PARENTING DIMENSIONS



OUTCOMES FOR INFANTS AND CHILDREN



Note: Original figure developed by authors of this report.



What is Responsive Feeding

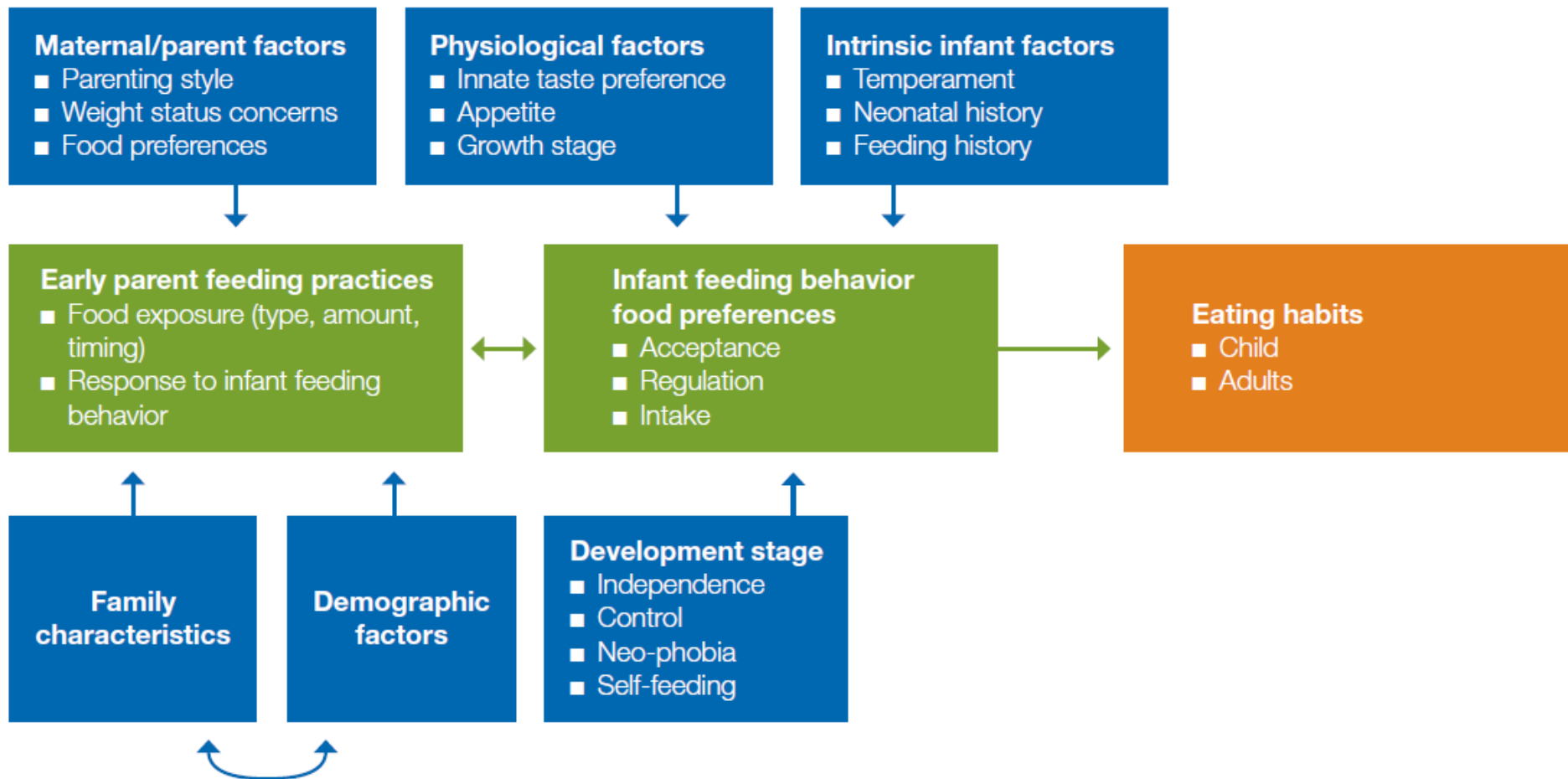
Responsive Feeding is a key dimension of responsive parenting involving reciprocity between the child and caregiver during the feeding process.

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

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>.

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 4 and 6 months of age.

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	<ul style="list-style-type: none">■ Wakes and tosses■ Sucks on fist■ Cries or fusses■ Opens mouth while feeding to indicate wanting more	<ul style="list-style-type: none">■ Seals lips together■ Turns head away■ Decreases or stops sucking■ Spits out the nipple or falls asleep when full
4 through 6 months	<ul style="list-style-type: none">■ Cries or fusses■ Smiles, gazes at caregiver, or coos during feeding to indicate wanting more■ Moves head toward spoon or tries to swipe food towards mouth	<ul style="list-style-type: none">■ Decreases rate of sucking or stops sucking when full■ Spits out the nipple■ Turns head away■ May be distracted or pays more attention to surroundings
5 through 9 months	<ul style="list-style-type: none">■ Reaches for spoon or food■ Points to food	<ul style="list-style-type: none">■ Eating slows down■ Pushes food away
8 through 11 months	<ul style="list-style-type: none">■ Reaches for food■ Points to food■ Gets excited when food is presented	<ul style="list-style-type: none">■ Clenches mouth shut or pushes food away
10 through 12 months	<ul style="list-style-type: none">■ Expresses desire for specific food with words or sounds	<ul style="list-style-type: none">■ Shakes head to say “no more”
1 to 2 years	<ul style="list-style-type: none">■ Combines phrases with gestures such as “want that” and pointing■ Can lead parent to refrigerator and point to a desired food or drink	<ul style="list-style-type: none">■ Uses words like “all done” and “get down”■ Plays with food or throws food when full



6 to 12 Months

- **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

- **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 Randomized Controlled Trials

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

Guidelines Implementation: Systems Changes Needed



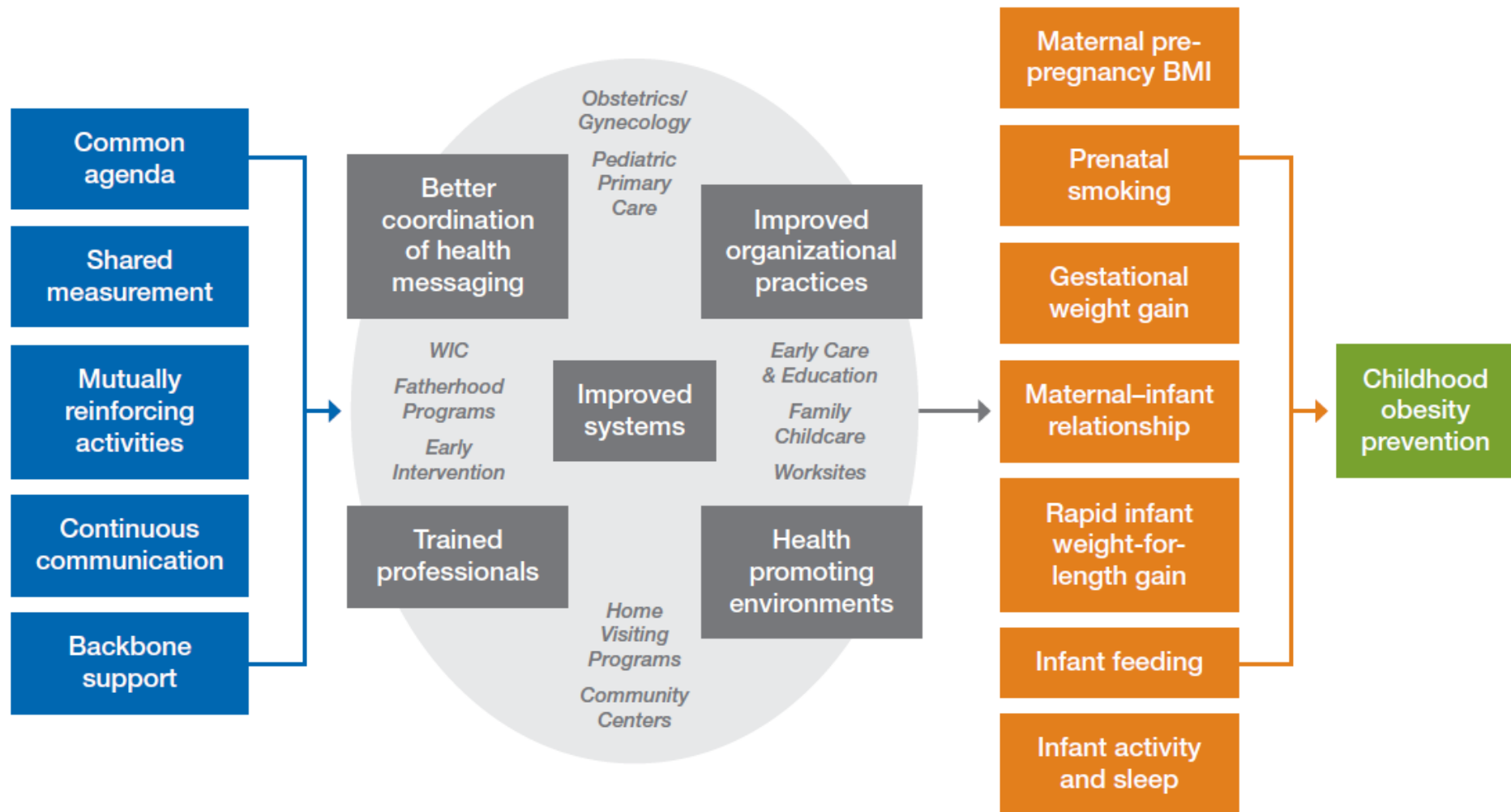
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Collective Impact Activities

System-Level Impacts

Modifiable Conditions

Outcome



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



Next Steps

- **Sharing the guidelines with healthcare professionals, early care and education providers, parents and caregivers**
- **Two additional briefs forthcoming:**
 - ECE Professionals
 - WIC Providers

How to Access Report

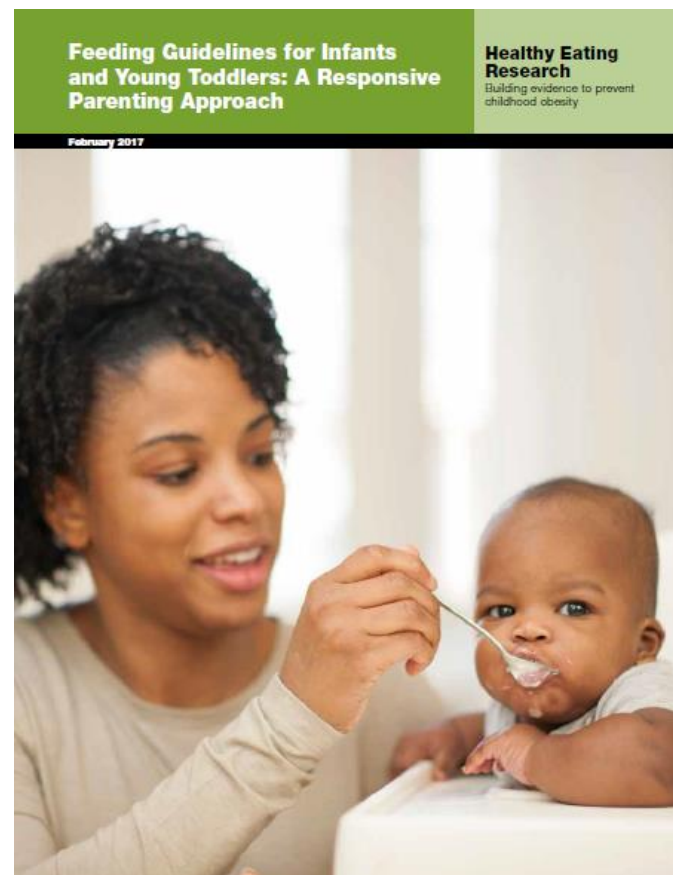


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The Full Report and Executive Summary are available on the Healthy Eating Research website

<http://healthyeatingresearch.org>

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Questions?



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