

# Feeding Infants and Young Toddlers: Using the Latest Evidence in Child-Care Settings

## Healthy Eating Research

Building evidence to  
prevent childhood obesity

Issue Brief, May 2017

### Introduction

Early childhood is a critical period in the development, growth, and health of young children. The most recent data indicate that 60 percent of children ages 0 to 5 in the United States were under non-parental care at child-care centers (41%), home care by a relative (26%), and/or home care by a non-relative (5%). These child-care settings are part of the network of Early Care and Education (ECE) programs. ECE programs include both appropriate caregiving and one or more feedings, making ECE providers key players in the implementation of feeding and dietary guidelines targeting infants and toddlers.

Early life diet and feeding strategies play an important role in establishing healthy food preferences and behaviors, yet there is a lack of evidence-based guidelines for infant and toddler feeding practices in the United States. Furthermore, such guidelines are needed to address the prevention of child overweight and obesity, as a significant proportion of children ages 2 or younger are already at risk. While there is strong justification for comprehensive infant and toddler feeding guidelines, current Dietary Guidelines for Americans (DGA) do not address the age group of birth to 24 months. As new evidence suggests that nutrition within the first 1,000 days (the period from conception to age 2) is critical in a child's growth and development, such recommendations are expected to be included in the 2020 DGA.

In 2016, *Healthy Eating Research*, a national program of the Robert Wood Johnson Foundation, convened an expert panel to review the evidence that has emerged over the past two decades for promoting healthy nutrition and feeding patterns for infants and toddlers. The expert panel's full report, "Feeding Guidelines for Infants and Young Toddlers: A Responsive Parenting Approach," is available on the *Healthy Eating Research* website.<sup>1</sup>

This issue brief summarizes the evidence presented in the expert panel's full report as it relates to the ECE setting.



A series of detailed guidelines adapted for ECE providers on how and what to feed infants and toddlers can be found in the appendices attached to this brief. Information that can be distributed to parents can be found within the full report.

This issue brief provides guidelines on how and what to feed infants and toddlers ages 2 or younger, based on current scientific evidence, within the context of the growing child and responsive caregiving. The brief also highlights related behaviors such as physical activity, television and other media use (screen time), and sleep, as well as important considerations including food allergies and food safety for this age group.

Recognizing that ECE settings are regulated not only by federal standards, but also by rules and regulations at the state and local levels, the adapted guidelines included in this brief are intended to be general enough for integration into feeding times in ECE settings across the nation.

### The Evidence

There are many factors influencing what infants and toddlers consume. ECE providers need to be aware of and understand: how infants and toddlers develop food preferences and the role ECE providers play in influencing those preferences; how infants and toddlers signal hunger and fullness; and the role of responsive feeding in developing healthy food habits. Further, ECE providers also need to understand: how and when to feed complementary foods; sleep patterns and their influence on healthy eating; physical activity needs of infants and toddlers; and the need for limits on screen time.

### Breastfeeding

Due to the health benefits that breastfeeding offers to children and women, the American Academy of Pediatrics (AAP) recommends that infants be breastfed exclusively from birth until about 6 months. Once complementary foods are introduced, it is recommended that breastfeeding continue until the child is at least 1 year old. Among infants born in 2013, 81.1 percent of women in the United States initiated breastfeeding; however, by six months the percent of women engaged in any breastfeeding dropped to 51.8 percent, and by one year to 30.7 percent. Differences in breastfeeding rates are observed across income categories, states, and race/ethnicity.<sup>2</sup> Women returning to work or school can find breastfeeding particularly challenging, as it can be difficult to maintain an adequate milk supply without the proper supports in place.<sup>3</sup> ECE support of breastfeeding working mothers is essential, as many use ECE programs for their infants and young toddlers.

Suggested best practices to support breastfeeding in the ECE setting include:

- encouraging lactating mothers to nurse upon arrival, during visits, and before departure;
- providing a quiet, private, comfortable place in which mothers can breastfeed; and
- ensuring breastfeeding mothers and ECE staff practice safe handling and labeling of expressed breast milk.

### Shaping Food Preferences Among Infants and Toddlers

ECE providers have the opportunity to play a vital role in shaping the food preferences of young children in their care. Understanding how flavor and food preferences are established early in life is crucial as early childhood dietary patterns track into later childhood and adolescence. The evidence suggests that infants born to mothers who consumed fruits and vegetables during pregnancy and while breastfeeding are more likely to learn to accept these foods.

Regardless of exposure during pregnancy and breastfeeding, repeated exposure to new and different foods is necessary so that infants and young children learn to like them, especially for those foods that have bitter or sour tastes, as is the case with many vegetables.

Likewise, it is vital to expose infants to different textures in order to properly transition to table food—for example, moving from pureed to mashed to lumpy and to chopped soft solid food during the first two years of life. By age 2, it is expected that children will have fully transitioned to table food. For these reasons, it is crucial for meals in the ECE setting to include a plentiful supply of fruits and vegetables. Furthermore, ECE providers can facilitate repeated exposures of healthy food, including fruits, vegetables, and whole grains, until infants and toddlers learn to like and accept them.

### The Role of the Feeding Environment

Infants and toddlers rely entirely on their caregivers to learn what, when, and how to eat. ECE providers should decide which types of foods are made available to infants and toddlers and the amount of food served, the frequency with which food is offered, and the type and size of utensils used to eat (if any).

Allowing infants and toddlers to become familiar with healthy foods, such as vegetables, is key for the development of healthy food preferences. Numerous attempts are needed for most infants to accept and learn to like new vegetables. The chances of accepting a new food may increase by pairing it with a food or sauce the infant/toddler is already familiar

## Definitions

**COMPLEMENTARY FEEDING** is a process that starts when human milk or infant formula is complemented by other foods and beverages and ends when the young child transitions fully to table foods. The complementary feeding period typically continues to 24 months of age.

**COMPLEMENTARY FOODS** are foods and beverages other than human milk or infant formula (liquids, semisolids, and solids) provided to an infant or young child to provide nutrients and energy.

**RESPONSIVE FEEDING** is a key dimension of responsive parenting. It is a process that involves 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 PARENTING** is a caregiving 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, and inhibitory control.

with and likes (e.g., red bell peppers or yellow squash with a preferred healthy dip).

Evidence also shows that young children are more likely to try new and different foods when they observe their caregivers eating them enthusiastically, as opposed to when the food is offered to them without having a role model present. Thus, ECE providers are critically important in modeling healthy eating behaviors by sitting at the table with and eating the same foods as the child.

## The Role of Responsive Feeding

Similar to responsiveness in other areas of ECE,<sup>4</sup> it is important for ECE providers to learn how infants communicate different eating and feeding behaviors and that as caregivers they need to respond accordingly. Infants do not have the capacity to verbally communicate their feeding and psycho-emotional needs, requiring a responsive approach by every caregiver.

One study recommends the following specific responsive feeding guidelines:

- ensuring that the feeding environment is pleasant with few distractions (e.g., no television or other screens);
- ensuring that the child is seated comfortably, ideally facing others;
- ensuring that the expectations from the caregiver and child are communicated clearly and consistently;
- ensuring that the food is healthy, tasty, developmentally appropriate, and offered on a predictable schedule so the child is likely to be hungry;
- encouraging and attending to the child's signals of hunger and satiety; and
- responding to the child's feeding needs in a prompt, emotionally supportive, contingent, and developmentally appropriate manner.

Nonresponsive feeding is strongly discouraged as it is characterized by a lack of reciprocity between the caregiver and child. Nonresponsive feeding can lead to: (a) the caregiver taking control and dominating the feeding situation by controlling and pressuring behaviors; (b) the child controlling the situation leading to indulgence; or (c) the caregiver ignoring the child and becoming uninvolved. When caregivers control the feeding, not only do they potentially override the child's internal hunger and fullness cues, but it is thought that they may interfere with the child's emerging autonomy and striving for independence based on learning new skills. Each of these undesired outcomes of nonresponsive feeding have been associated with the development of poor dietary habits and/or increased childhood obesity risk.

How caregivers respond to other behaviors, such as sleeping/waking patterns, and the soothing techniques used to calm distressed infants, can also influence the infant's ability to learn to properly self-regulate food intake. Understanding sleeping patterns of infants and how rapidly they change during the first year of life (relatively short sleep/wake cycles in early infancy, with most infants sleeping through the night by 6 months) has also been identified as central for preventing unhealthy eating behaviors and obesity risk in young children.

The expert panel's review of rigorous scientific evidence on responsive parenting (i.e., caregiving) practices supports the view that infants and toddlers should not be pressured to eat or finish the food served to them. The available evidence emphasizes the importance of allowing the infant or toddler to participate in meals and to avoid distractions during mealtimes, including TV viewing and other electronic screens. These studies (see full report for references and summaries of studies) reiterate the importance of mealtimes being a warm and pleasant experience with plenty of verbal and non-verbal interactions between the caregiver and the infants and toddlers. The studies also emphasize the importance for caregivers to

help infants and toddlers learn to follow routine feeding and sleeping schedules. While these studies were not conducted in the ECE setting, the positive outcomes of the studies (including improved weight status and responsive feeding practices) have applications for ECE providers. Responsive caregiving is likely to be crucial not only for the self-regulation of food intake but also of emotions.

Responsive feeding research conducted to date in the ECE setting has shown that infant-care providers were more likely than toddler-care providers to follow responsive feeding practices. Furthermore, providers working at centers participating in the Child and Adult Care Food Program (CACFP) were more likely to practice responsive feeding with both infants and toddlers. For example, practices such as sitting with children at meals were significantly associated with CACFP participation. This evidence suggests there is an opportunity to improve the implementation of responsive feeding practices in daily routines in ECE settings.

### Introducing Infants to Complementary Foods

There is broad consensus that complementary foods (commonly referred to as solid foods) should be introduced once the infant shows developmental signs of readiness. Text box 1 outlines these key developmental readiness cues.

The vast majority of infants reach these developmental milestones between 4 and 6 months of age. The ability to sit without support is considered to be a key cue for assessing readiness for introduction of complementary foods as it correlates strongly with the rest of the cues and also with physiological development including gastrointestinal, renal, and immunological system maturation. Experts also agree that complementary foods should not be introduced before 4 months of age as the infant's body is not physiologically or developmentally ready. Early introduction of solids also may increase the risk of childhood obesity. Many parents

#### **Text box 1.** **Introduction of complementary foods:** **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
- Does not have extrusion reflex any longer (i.e., does not automatically push solids out of the mouth with her/his tongue)
- Brings hands and toys to the mouth for exploration
- Indicates a desire for food, e.g., eagerness to participate in family mealtimes and trying to grab food to put in her/his mouth

may find the concept of developmental readiness to begin complementary feeding confusing or difficult to understand. As part of the reciprocal communication with parents, ECE providers can play an important role in educating parents to observe their child's developmental eating cues. Then parents and ECE providers can mutually determine when complementary feeding can begin.

### Recognizing Infants' and Toddlers' Hunger and Fullness Cues

Responsive feeding of infants and young toddlers relies heavily on learning how they communicate hunger and fullness. Infants' primary form of communication is crying, and research has shown this causes distress to caregivers who often interpret crying as a sign of hunger. Research has shown that feeding to soothe fussy infants has been associated with excessive weight gain and that poor sleep routines during the first two years of life are related to poor dietary quality and obesity risk in early childhood.

In early infancy, crying should be interpreted as a sign of hunger only if it is accompanied by additional cues (see Text box 2), including: hand-to-mouth movements, mouthing, rooting, sucking noises/motions, fast breathing, clenched fingers and fists over chest and tummy, and flexed arms and legs. Infants use different signals to indicate that they are full, such as closing their mouths when food is offered and turning their head away from the food. As infants become older and enter toddlerhood, hunger cues also include leaning towards food, visually tracking food with eyes, limb movements showing excitement, opening mouth as the spoon approaches, and asking for or pointing to food. In general, feeding cues progress as the child ages from behaviors that are subtle and primarily oral (e.g., mouthing) to those that are active and tend to involve greater body movements (e.g., reaching, pointing). If ignored, early and active cues are followed by late cues, such as crying and struggling, which indicate heightened levels of agitation.

By systematically monitoring and recording these signs, ECE providers can learn how to interpret and respond accordingly to a baby's hunger and fullness signals. It may take some time, but it is important for caregivers to help the baby learn to eat only in response to hunger and to stop when full.

### Other Important Considerations for Infants and Toddlers in the ECE setting

#### Sleep Considerations for Infants and Toddlers

Healthy sleep requires adequate duration, appropriate timing, good quality, regularity, and the absence of sleep disturbances or disorders. An expert panel convened by the American Academy of Sleep Medicine recently developed evidence-based sleep guidelines for children and adolescents. To promote optimal health, infants ages 4 to 12 months should sleep a total of 12 to 16 hours per day (or per 24-hour cycle), including naps, on a regular basis. Children 1 to 2 years of age should sleep 11 to 14 hours per 24 hours (including naps) on a regular basis.

## Text box 2. Evolution of hunger and satiety signals during the first two years of life

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

General recommendations for infants younger than 4 months are difficult to make due to the wide range of normal variation in duration and patterns of sleep in early life, and insufficient evidence for associations with health outcomes. In the ECE setting, it would be helpful for caregivers to communicate their established naptime schedule to parents so these can be continued at home. Once established, healthy sleeping and feeding patterns should be consistent between ECE settings and the home environment.

### Physical Activity, Screen Time, and Sedentary Behavior Considerations for Infants and Toddlers

The evidence available in 2016 indicates that infancy is a time when movement and active play facilitate the motor, social, and cognitive development needed for healthy growth and wellbeing. Toddlerhood is a time when children are eager to actively explore and learn from their environments. For this reason, proper infant and toddler development relies heavily on early life opportunities to explore and move frequently. Motor, social, and cognitive development are fundamental for developing healthy eating habits, thus physical activity and active play opportunities are strongly linked to the proper implementation of responsive feeding guidelines. As with feeding behaviors, ECE providers should be role models for

infants and pay attention to their own sedentary and physical activity behaviors.

Typical sedentary behaviors of children 2 years old or younger refer to: time spent sitting while playing or engaging in learning activities; time spent on screens, such as watching TV or in front of a digital device (e.g., electronic tablet, smartphone, computer screen); and time spent restrained in a car seat, high chair or stroller, or inside of a play pen or crib while the child is awake. In summary, ECE providers should avoid using screen media for children younger than 18 months, with the exception of provider-supervised video-chatting with parents, and prolonged sitting or being restrained is not recommended for more than one hour at a time.

### Food Safety Considerations for Infants and Toddlers

Children under 5 years of age are highly vulnerable to foodborne illness because their immune systems are still developing and they produce less stomach acid that kills harmful bacteria. Food illnesses can be lethal for infants and toddlers because they are often accompanied by diarrhea, which in turn can quickly deplete the young child’s vital body fluids (i.e., severe dehydration). Foodborne illnesses can also cause serious

discomfort and seriously disrupt feeding routines and behaviors as they often lead to nausea, vomiting, stomach pain and cramps, fever, and chills. Two other important food safety concerns for infants and toddlers are food-related mouth burns (from offering fluids or solid food that are excessively hot) and choking.

Food safety for infants and toddlers relies almost entirely on their caregivers. Thus, it is important for ECE centers to have written policies in place to keep food safe from bacteria and to prevent hazards such as choking and mouth burns. At a minimum, food safety plans should include guidance on cooking temperatures, cold storage guidelines, and handling of leftovers. It is also imperative that centers provide adequate training to child-care staff to ensure that these guidelines are implemented into practice. ECE settings should check with their licensing authority for specific food safety regulations.

### Food Allergy Considerations for Infants and Toddlers

Pregnancy and early life are highly sensitive periods for the development of the immune system and related outcomes, including risk for the development of food allergies. Thus, it is understandable that in the past, experts have recommended that dairy products and other highly allergenic food like eggs, peanuts, and fish not be introduced until after an infant's first birthday.

Recent systematic reviews, however, have found that maternal diet during pregnancy and the period mothers are breastfeeding was not associated with the development of food allergies in children. Recent evidence has also shown that there is no reason to delay introduction of allergenic foods beyond 12 months and perhaps not even beyond 4 to 6 months of age, when most infants are ready to be introduced to complementary foods. Additional evidence suggests that exposing infants during the first year of life to common allergenic food may actually decrease the risk of subsequent development of allergies to those food items.

Given the many unknowns with regards to the development of food allergies, the American Academy of Allergy, Asthma & Immunology recommends introducing the first tastes at home rather than in places such as the ECE setting. However, it is important for providers to be aware of common signs of food allergies (e.g., skin rashes, trouble breathing, nausea, vomiting, or loose stools in response to feeding) and know when to seek immediate medical care in the instance that infants or toddlers do develop food allergies and have a reaction while in their care.

### Policy and Practice Implications

ECE providers play an important role in implementing healthy feeding and eating guidelines in child-care settings, such as those recommended by the expert panel. In addition, they can also positively influence healthy feeding practices in the home through communication with parents. Careful examination of current ECE policies at the local, state, and federal levels is recommended to determine their alignment with the guidance suggested in the expert panel's full report and this issue brief.

ECE providers responsible for the simultaneous care of multiple infants and toddlers may be unprepared, and hence challenged to incorporate the suggested developmentally appropriate and responsive feeding guidelines. To overcome potential resistance and perceived barriers in the implementation of this guidance, professional development for ECE providers is essential.

Assessing the quality of implementation is also needed. A recent report by the Nemours Foundation highlights Quality Rating Improvement Systems that have been used to incorporate a healthy eating and physical activity environment into practice. This report discusses several self-assessment tools for evaluating ECE feeding settings. While each tool has some limitations, they offer adequate indications of current practice and track changes towards providing a responsive feeding environment. Lastly, extensive technical assistance may be necessary to guide implementation.

### Conclusion

ECE providers play a critical role in the lives of infants and toddlers. Given that what infants and toddlers are exposed to depends primarily on their caregivers, it is crucial that ECE providers have access to the foods and tools necessary to foster healthy eating practices, such as those recommended by the Healthy Eating Research expert panel. While previous guidelines in the United States and other countries have included responsive caregiving/feeding principles, the evidence-based strategies highlighted in this brief provide the most comprehensive, integrated, and pragmatic approach to date for communicating to ECE providers *what* and *how* best to feed infants and toddlers. Feeding is a critical component impacting the rapidly changing developmental stages during the first two years of life. Moreover, in order to foster optimal child development and prevent excessive weight gain, it is important to consider additional responsive parenting principles, including physical activity, soothing, and sleep, as these have also been shown to influence early life feeding behaviors and weight outcomes.

### Suggested Citation

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This issue brief is based on the full report of this expert panel. The full list of citations can be found in the full report:

Pérez-Escamilla R, Segura-Pérez S, Lott M, on behalf of the RWJF HER Expert Panel on Best Practices for Promoting Healthy Nutrition, Feeding Patterns, and Weight Status for Infants and Toddlers from Birth to 24 Months. *Feeding Guidelines for Infants and Young Toddlers: A Responsive Parenting Approach*. Durham, NC: Healthy Eating Research, 2017. Available at <http://healthyeatingresearch.org>.

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## Appendix 1.

### Responsive Parenting/Feeding Guidelines for ECE Providers: How to Feed in the First 6 Months

#### Responsive Feeding; Hunger and Satiety Cues

- Responsive feeding involves recognizing and understanding a baby's hunger and fullness cues and associated behaviors and responding accordingly through a warm and nurturing relationship.
- Babies are born with a natural ability that helps control their appetite. It's important for caregivers to learn how to interpret and respond accordingly to a baby's hunger and fullness signals. Being able to do that takes some learning.
- Misinterpreting a baby's hunger and fullness signs can reduce the baby's ability to self-control her/his appetite and lead to overeating as she/he grows up. Help baby learn to eat only in response to hunger and stop when full, so that she/he doesn't learn to eat for reasons other than hunger.
- Crying by itself cannot be interpreted as a sign of hunger. Additional cues that may indicate a baby is hungry at this age are: bringing hands to mouth, rooting reflex (ability that babies are born with to help with breastfeeding; it involves turning their heads toward anything that strokes their cheek or mouth), sucking noises, fast breathing, clenching fingers, flexing arms and legs.
- Although many caregivers interpret crying as a sign that the baby is hungry, it is important to remember that babies cry for many reasons—they may be wet, uncomfortable, or tired.
- When a baby cries, before offering food, try to soothe to calm her/him down and first check for things that are making the baby uncomfortable. Doing this may help you avoid overfeeding the baby or setting up the expectation that crying will always lead to feeding.
- A baby will let you know when she/he is full and no longer wants to eat. For example, at this age she/he may push you away, stop sucking, extend or relax her/his arms, legs, and fingers, or simply fall asleep.
- Babies have tiny stomachs, so they need to feed often throughout the day.

#### Baby's Wake/Sleep Cycles

- During a typical day between 4 months and 1 year, a baby sleeps from 12 to 16 hours distributed across frequent wake/sleep cycles.
- During the first month of life, it's normal and part of healthy development for babies to wake up three or more times at night, and sleep for short periods of time during the day.
- As the baby approaches 6 months, it's normal for her/him to sleep through the night.

#### Soothing Techniques to Calm a Baby

- Use soothing techniques to calm a crying baby, such as rocking, swinging, swaddling, repeating a word, shushing, or changing her/his environment.
- Some, but not all, babies may need a pacifier to calm down.
- If a baby was recently fed and is crying or fussy make sure to check for things that are making her/him uncomfortable, such as a wet diaper, and try to calm her/him down using soothing techniques before resorting to feeding.

#### Temperament

- Knowing a baby's temperament and causes of fussiness can help to interpret the soothing and feeding needs she/he is communicating, and help a baby develop and grow well.
- Some babies have a fussier personality or temperament than others or experience times that they are more fussy than usual. A baby's fussiness is not always related to hunger. For example, it may be related to being wet, too warm or cold, tired, overstimulated, teething, or being ill.
- Fussiness could be interpreted as a baby being hungry when it's not, and could lead to overfeeding.

### Pressure to Finish a Feed

- Don't force a baby to finish the bottle, since this will interfere with the baby's natural ability for appetite control down the road. Remember that a baby knows when to stop feeding.

### Bottle Use

- Be cautious about the volume of formula or breast milk given at each feed. Studies have shown that bottle size matters. The bigger the bottle used, the more likely babies will be fed more than what they need.
- It is not recommended to mix cereal with formula or breast milk in a bottle. There is no evidence that this helps babies sleep longer and it could be a choking hazard.
- Feeding cereal in a bottle can diminish a baby's ability to regulate her/his appetite resulting in overfeeding and gaining weight excessively.
- Feeding cereal in a bottle to infants 0 to 6 months may cause discomfort as their tummies may not be ready for the cereal.
- Do not practice "bottle propping" (leaning the bottle against a pillow or other support at the stage when babies cannot hold the bottle on their own). This practice is an example of nonresponsive feeding.
- You should not put a baby to bed with a bottle. This practice can affect the health of the baby's teeth and is an example of nonresponsive feeding.

### Introduction to Solid Food

- It is not recommended to introduce solid food before baby is 4 months old as the baby's body is not ready and this adds unnecessary calories to her/his diet.
- Infants should be fed only breast milk and/or formula for about 6 months. However, babies may be ready to be introduced to solid food between 4 and 6 months if they are able to sit with good head control and showing other signs of readiness.
- Babies are likely to be ready to be introduced to solid food if they can sit up well with little or no support, have good head control, do not automatically push solids out of their mouths, and are able to munch and swallow. They may also show interest in food, including trying to grab it and put it in their mouths.

### Feeding Environment

- Feed a baby in a pleasant environment where you can interact warmly with the baby.
- Do not pressure a baby to finish the bottle or food on the plate.
- Do not give a bottle or food to a baby as a reward for behaving the way you want. Only offer food in response to a baby's hunger signals.
- Do not feed a baby in front of the TV. Meals should be a bonding and social occasion where both caregiver and baby benefit from the nurturing interactions that occur during a feed.
- Remember to interact warmly and to be responsive to a child's behaviors while feeding.
- Avoid distractions while feeding a baby, including using your smartphone. The baby requires your full attention and interaction while eating.

## Appendix 2.

### Responsive Parenting/Feeding Guidelines for ECE Providers: How to Feed During 6 to 12 Months

#### Responsive Feeding, Meals, and Sleeping Routines

- Expect that at around 6 months a baby will be able to sit, chew, and swallow semi-solid food. These are skills a baby needs to have before starting to eat solid food.
- Sometime between 6 and 12 months a baby will be able to self-feed either with a spoon or by holding age-appropriate finger food. Encourage the baby to do so.
- From 6 to 12 months, continue following a baby's hunger and fullness signals. Remember that adequately responding to her/him in a prompt and caring way will help a baby develop healthy eating habits.
- While paying attention to a baby's hunger and fullness signs, keep in mind that a baby's appetite may change during periods of fast growth or when she/he is feeling sick.
- Hunger signs for 6- to 12-month-old babies include opening mouth when spoon gets near; reaching for the spoon or food; pointing to food; getting excited when food is presented; and expressing a desire for specific foods with words or sounds.
- Fullness signs for 6- to 12-month-old babies often involve shaking of their head, turning head away from food, and not opening mouth when spoon is close to indicate that no more food is desired.
- Establish a consistent regular schedule for a baby's meals, snacks, and sleep times. Establishing routines can help a baby set up good habits and learn when to expect to eat.
- Actively engage in conversations with each baby while feeding her/him and as you change routines throughout the day. Explain to a baby what you are doing and what is coming next, and warmly respond to her/his verbal cues. These interactions will help her/him to understand expectations and facilitate transitions.
- When a baby cries try to use soothing strategies to calm her/him down such as: (1) swaddling, (2) side or stomach position while awake, (3) shushing, (4) swinging, and (5) sucking from a pacifier

#### Mealtime as a Pleasant Experience

- Make sure to create a comfortable, stress-free, caring environment with few distractions when a child is eating.
- Make mealtime a pleasant experience for you and each baby. Talk warmly to the baby during feeding, and respond to her/his sounds or words. Encourage, but don't force, a baby to eat.
- A baby will learn that you understand and will respond to her/his hunger and fullness signs. This will help you in building a positive trusting relationship with each baby.
- Make a baby's eating experience part of family-style meals. Preparing healthy meals will introduce a baby to family foods.
- During family-style mealtimes, place each child seated facing others so that she/he has an opportunity to interact with them.

### **Introducing a Baby to Different Flavors and Textures Using Responsive Feeding**

- From around 6 months to 12 months, a baby will progress from assisted feeding to self-feeding. During this time offer the baby food of different flavors and textures.
- Take your time feeding each baby, and be patient while offering new healthy food. Don't give up if a baby doesn't accept the food the first time you offer it. Try again during a different eating occasion. It may take as many as 15 to 20 tries before a baby learns to like a new food.
- Eating habits are established early in life, so it is important that caregivers only offer healthy food to babies. Offer a baby a variety of soft/cooked vegetables, fruits, and other healthy food with different flavors and textures so that she/he learns to like them.
- Provide healthy, tasty food that is appropriate for a child's age at regular times and in a pleasant environment, and let each baby decide how much she/he wants to eat.
- Support a baby's attempts to self-feed. Let each baby explore different food items and tastes with her/his hands. This is messy but very important for a baby to develop healthy eating habits.
- When introduced to new food, some babies will make "faces" that look like they do not like the food. This is a normal part of learning to like new food and does not mean the baby will dislike the food. Be patient and keep offering the food.
- Remember that it may take more tries for a baby to learn to like vegetables than other healthy food like fruits. Continue offering a variety of vegetables and other healthy food, and let each child decide when she/he is ready. The most important thing is that you keep offering vegetables. Be patient and keep trying.

### **Caregiver Role Modeling**

- Babies imitate their caregivers. Eat a variety of healthy food in front of a baby, and always show a positive attitude towards healthy food.
- Never force a baby to eat. Let her/him choose what and how much she/he wants to try and eat.
- Correctly interpreting hunger and fullness signs will allow a baby to learn how much food she/he needs to consume, and prevent her/him from eating for reasons other than hunger.

### **Do Not Practice Restrictive Feeding with a Baby**

- Some caregivers may be concerned about babies not gaining enough or gaining too much weight. Trust each baby's hunger and fullness cues. Encourage parents to work with their pediatrician to resolve any weight gain concerns.

### **Screen Time and Physical Activity**

- Avoid TV and other screen time during mealtimes. This can interfere with the opportunity for the baby, you, and others to socialize and interact. These interactions are very important for a baby's development and in the establishment of healthy eating habits.
- Engage in fun, developmentally appropriate active play with each baby every day.
- Provide supervised times during the day for each infant to freely move and explore the world around her/him.

### **Establishing Sleep and Feeding Routines**

- It may take some time for you and a baby to establish a sleep and feeding routine. Once it happens, it's important to be consistent as having regular schedules can help babies be less fussy and develop healthy sleeping and feeding patterns.
- Expect normal growth spurts that may temporarily disrupt a baby's regular schedule. Teething near 6 months of age may also be temporarily disruptive. Try keeping a baby's sleep and feeding routines as consistent as possible, but be sensitive to each baby's needs during these transition times.

### Appendix 3.

## Responsive Parenting/Feeding Guidelines for ECE Providers: How to Feed During 12 to 24 Months

### Responsive Mealtime Routines

- Establish a feeding routine for a child's meals and snacks. Children of this age usually consume three meals and two or three healthy snacks every day.
- Meal and snack time should be a pleasant experience for toddlers. Take the time each child needs to have a non-rushed and enjoyable mealtime or snacking experience in a stress-free environment with few distractions (e.g., without TV or other distracting screens).
- Eat with toddlers as a part of family-style meals. Talk to each toddler during meals and respond to her/his verbal and non-verbal requests. Continue to pay attention to hunger and fullness signs. Don't pressure a toddler to finish her/his plate.
- Provide a healthy food environment in the ECE setting for toddlers. Offer healthy meals and snacks and don't have (or consume) unhealthy food around her/him, including sugar-sweetened beverages, sweets, salty snacks, and fried food/snacks.
- Screen time and media use during feeding is strongly discouraged since it can interfere with the caregiver-child interactions that each toddler needs to experience in order to learn to eat healthy.

### Self-Feeding and Transitioning to Table Food

- Let a child self-feed with age appropriate utensils such as baby spoons, toddler plates, and child size cups (e.g., sippy cups). This is important for a toddler's fine motor skills development and allowing her/him to decide when to start and stop eating in response to her/his own hunger signals.
- By 1 year, a child is expected to have started transitioning into "table or family food" (non-pureed food items, such as chopped cooked spinach, cooked green peas, diced cooked carrots, diced fruits, small bits of chicken, pasta, etc.). A child should be fully transitioned to "table or family food" by 2 years.

### Learning to Like Healthy Food

- During the transition to table food, continue to expose each baby to healthy food including plenty of vegetables and fruits, and avoid offering unhealthy food such as sugar-sweetened beverages, sweets, salty food/snacks, and fried food/snacks that are high in added sugars, calories, and/or salt.
- It is normal for a child to continue to reject new food items the first time they are offered, especially those that taste bitter such as vegetables. Don't forget that it may continue to take some children up to 15 or 20 tries before accepting a new food.
- Let a child use all her/his senses to explore new food. Smelling, licking, touching, and playing with new foods is needed by children to learn to like them. It does take time, and patience with messiness.
- Picky eating, including wanting just a few food items, is a common behavior among toddlers. During this period, children go through major transitions in what and how they like to eat. Sometimes they even start refusing food they once liked (food jags). Be patient with each toddler. Continue to uphold feeding routines, provide a variety of healthy food and textures, and encourage her/him to try new foods or accept again food they previously liked. But do not pressure her/him, and continue allowing her/him to determine how much to eat.
- Children learn from observing the behaviors of their caregivers and older children. Thus caregivers are strongly encouraged to always eat healthy food and beverages in front of the child. It's also important to avoid making negative comments, facial expressions, or reactions about healthy food and beverages in front of a child.
- Offer healthy food in a form appropriate for the child's age and in a manner that is easy to chew and swallow.

## Appetite Control and Pressure to Eat

- Children may eat less at one meal but compensate at another meal by eating more. Indeed, some 1-year-olds only eat a single larger meal per day with smaller amounts at other times. Offer a child the recommended portion of healthy food from the different food groups (fruits, vegetables, grains, proteins, dairy) at each meal, and let her/him decide how much to eat.
- Don't pressure a toddler to eat, and don't show signs of frustration or anger if the child decides not to eat the food you offer her/him. There is always a next time to try to offer the new food again.
- To minimize food waste, offer small tastes of new foods. You can always give more to the child if she/he is still hungry. Also, if you are having a problem with fresh fruits and vegetables going bad before being consumed, consider using frozen fruits and vegetables.
- Praising a child for eating a healthy food may encourage her/him to learn to like it. However, it is not recommended to use food as a reward (e.g., giving candy as a reward for eating vegetables or for the child to stop crying) or "bribe" (e.g., offering a toy in exchange for finishing all the food on the plate). Doing this can interfere with a child's ability to learn how to control her/his appetite.
- Offering sweets or sugar-sweetened beverages may be very tempting when a child is crying a lot or having a tantrum. Avoid doing so as it may prevent the child from learning how to eat healthy and also control her/his own emotions.

## Sleep Routines

- Set consistent bedtime and nap routines. From 12 to 24 months, children sleep between 11 to 14 hours per day, including at night and naps. Children that have enough sleep are more likely to eat and grow healthy.

## Screen Time and Physical Activity

- From 12 to 24 months, screen time and media use should be limited as it can prevent a toddler from being physically active and eating healthy. Also remember that a child's language and social development is greatly facilitated by the social interactions that you have with the child, including conversations.
- Video-chatting with parent can provide benefits to the development of a child if an adult caregiver supervises the child.
- If you choose to use digital media with the 18- to 24-month-old toddler, choose high-quality programming/apps and use them together with the child. Don't let the child use the media by herself/himself.
- Do not expose a toddler to screens during meals and for one hour before sleep time.
- Avoid using media to calm a child.
- Keep sleeping spaces, mealtimes, and playtimes screen-free for you and the child.
- Avoid exposing toddlers to apps with advertising and/or unhealthy messages.
- Caregivers are encouraged to be role models to toddlers by limiting your own media use during those times when you are interacting with them.
- Provide opportunities for a toddler to be active throughout the day every day, with structured (adult-guided) and unstructured (free play) activities taking place both indoors and outdoors where she/he can move and play freely and safely. Play, walk, dance, be active with a child and let her/him do physical activities on her/his own. Remember that toddlers like to move around independently, but still need close supervision when doing activities on their own.
- Toddlers are very energetic, moving constantly; they like to explore their environments, looking around and inside objects. Daily and frequent age-appropriate, supervised, safe activities including jumping, walking, and pushing things around, throwing balls, and dancing to music help toddlers release their energy. These activities also help with their motor development.
- Equipment that limits or controls a child's movements, such as car seats, high chairs, cribs, small playpens, and strollers, should be used only for what they were designed to do (safety, transportation, eating, sleeping) and not simply for confining the child to a space.

## Appendix 4.

### Infant Feeding Guidelines: What to Feed From Birth to One Year

#### 0 to 6 Months

- For the first 6 months (or until the introduction of solid food), most babies only need breast milk (or formula). Breast milk provides nearly all the nutrients needed for optimal growth, and strengthens the infant's immune system. The composition of breast milk changes as the baby grows to match her/his individual nutritional needs. Breastfeeding is recommended to continue until the baby is at least 1 year old.
- If the baby is not given breast milk, iron-fortified formula is the next best choice to satisfy a baby's nutritional needs during the first six months of life. Do not feed low-iron formulas (those that have less than 6.7 milligrams of iron per liter) to your baby.
- Newborns consume about 1 to 2 ounces of formula per feeding occasion during the first month of life. This amount increases to about 2 to 3 ounces per feeding during the second month, and then gradually increases to 4 to 6 ounces by 5 months. Pay attention to the baby's hunger and fullness signals and never pressure her/him to finish the bottle. A baby does not need to finish the formula in the bottle.
- Be cautious about the volume of formula or expressed breast milk given at each feed. Studies have shown that bottle size matters. The bigger the bottle used, the more likely the baby will be to consume more than needed.
- It is not recommended to offer fruit juices or sugar-sweetened beverages before a baby's first year of life.
- Only breast milk or formula should be fed with a bottle to babies. Don't add cereal to the milk in a baby's bottle. This practice will not improve sleep and it may interfere with how well nutrients in breast milk or formula are absorbed.

#### 6 to 12 Months

- When a baby is between 4 and 6 months old, pay attention to her/his developmental signs to find out if the baby is ready to start eating solid food. Signs a baby is ready include sitting up unsupported, munching and chewing food, and the ability to swallow food, grasp items, and bring food to her/his mouth. If the baby pushes solids out with her/his tongue when food is offered (thrust reflex), and/or gags when a spoon or food is placed in her/his mouth then she/he is not yet ready to be introduced to solid food.
- Sometime between 4 and 6 months (when a baby is developmentally ready) a baby's nutritional needs can no longer be met by breast milk or formula alone. At this time, gradually start introducing solid food by offering 1 to 2 teaspoons of a pureed or mashed food, slowly increasing the amount while paying attention to the baby's hunger and fullness signals. If the baby is still hungry after consuming the small amount of solids recommended, then feed breast milk or formula.
- Mothers who choose to breastfeed are encouraged to continue breastfeeding until their babies are at least 1 year old.
- From 6 to 12 months, breast milk or formula continues to be the most important source of nourishment for babies. Solid food needs to be introduced gradually. Solid food will initially provide about one-third, increasing to over half, of the total calories that a baby needs by the time she/he is 1 year old. Examples of the amount of solids needed between 6 and 12 months can be found at: [http://www.fns.usda.gov/sites/default/files/cacfp/CACFP\\_infantmealpattern.pdf](http://www.fns.usda.gov/sites/default/files/cacfp/CACFP_infantmealpattern.pdf).
- Exclusively breastfed babies need to get started on solid foods that are rich in iron and zinc sometime between 4 and 6 months, because by that time breast milk does not provide enough of these nutrients. Iron-zinc fortified baby cereals or pureed/mashed meats are recommended as first solid foods for exclusively breastfed babies. In general, about 2 servings per day of cereal (2 tablespoons/serving) OR 1 to 2 ounces of meat per day is recommended to meet the need for these nutrients. However, each baby needs different amounts to start. Pay attention to each baby's hunger and fullness signals to find out how much that baby needs to eat.
- If the baby is formula-fed, it is recommended that the formula be fortified with iron and zinc. The gradual introduction of solid food to a baby sometime between 4 and 6 months of age is important because it supports her/his ability to learn to eat a variety of healthy food with different textures and flavors. Introduction of solid food also helps with the baby's development, including social skills.

## 6 to 12 Months (cont.)

- After introducing iron- and zinc-fortified baby cereals or mashed meats, there is no particular order to follow for introducing solid food. At this point, a baby is able to digest and absorb the nutrients from healthy food belonging to different food groups. However, it's important to keep in mind that the earlier vegetables are introduced (once a baby is ready to consume solid food), the more she/he is likely to easily accept them.
- When introducing a new vegetable, it is recommended to mix it first with a familiar food such as breast milk, formula, or cereal. Combining new food items that are more difficult to accept by babies, such as some vegetables, with food they are already familiar with can help the baby accept and learn to like vegetables more readily.
- Introduce the baby to a variety of food from all the food groups (vegetables, fruits, grains, meats/protein, dairy) by the time she/he is 7 to 8 months old.
- Offering a variety of vegetables and fruits and avoiding food of limited nutritional value, such as those high in calories, sugar, salt, and fat (e.g., French fries, sugary cereals, cookies), helps a child gain a healthy amount of weight.
- What a baby eats at around 9 months is indicative of what she/he will like to eat when school-aged. Offer each baby a variety of vegetables and fruits and whole grain products (e.g., brown rice, whole grain cereals).
- It is important to introduce a baby to a large variety of vegetables and fruits prepared in different healthy ways and textures before she/he turns 1 year old. This will expose a baby to an array of flavors and textures that will make it easier for her/him to accept and learn to like healthy food from all the food groups (fruits, vegetables, whole grains, dairy, and protein). Each baby will also learn to self-control the desire for unhealthy food that has excessive amounts of added sugars, sodium (salt), saturated fat, and calories.
- Sometime between 6 and 8 months, introduce the baby to pureed or mashed food, and gradually transition into lumpy food and soft finger food. Then, between 8 and 12 months, the baby can start eating minced, chopped food and hard finger food. Experiencing different textures will help a baby with her/his chewing skills, and with learning to accept and like different healthy food. Encourage the baby to self-feed as soon as she/he is ready.
- Between 6 and 11 months, babies eat about every two to three hours or about five or six occasions during the day.
- Besides offering 6 to 8 ounces of breast milk or iron-fortified formula, at each meal you can offer babies:
  - Up to 4 tablespoons of iron-fortified infant cereal or protein foods (meats, eggs, legumes) or dairy foods such as cottage cheese (up to 4 ounces), cheese (up to 2 ounces), or yogurt (up to 8 ounces)AND
  - Up to 2 tablespoons of vegetables or fruit
- For a smaller meal or snack you can offer breast milk or formula (2 to 4 ounces), AND:
  - Up to ½ slice of whole grain bread or up to 2 whole grain crackers, or up to 4 tablespoons of iron-fortified infant cerealAND
  - Up to 2 tablespoons of vegetables or fruit, or a combination of both
- Once a baby starts solid food, it is recommended to offer a total of 4 to 8 ounces per day of plain drinking water in a cup. This will help the baby get familiar with the taste and to learn to like plain water.
- When preparing food for the infant, do not add salt or sugar. Likewise, when choosing baby food that is already prepared, choose options without (or with limited amounts of) added salt or sugars. This will help the baby learn to like the natural flavors of food and help the child avoid consuming excessive amounts of salt and sugar later on in life.
- Feed the baby only healthy food that provides plenty of vitamins, minerals, and fiber, including fresh vegetables, fruits, and age-appropriate whole grain products. Also, make sure to feed the baby nutritious food that provides an adequate amount of protein (such as eggs, fish, meat) and energy.

### **Foods to Avoid or Limit**

- Cow's milk should NOT be offered before the child turns 1 year old because it may cause intestinal bleeding.
- Plant-based beverages (e.g., soy, rice, almond milks) are NOT recommended for any child in place of breast milk or formula, unless prescribed by a pediatrician (e.g., commercially prepared soy-based infant formula). These beverages are not designed to meet the nutritional needs of a child to the same extent as breast milk or infant formula.
- It is recommended to offer mashed fresh fruits instead of fruit juices since they have a higher nutritional value. Also, keep in mind that fruit juices and sugar-sweetened beverages are a concentrated source of calories that may displace other food with better nutritional value, or discourage a baby from eating other nutritious food that is not sweet. AVOID introducing fruit juices during the first year of life. Avoiding sugar-sweetened beverages can also help prevent dental cavities.
- It is strongly recommended to offer NO sugar-sweetened beverages such as flavored drinks (including Kool-Aid, fruit drinks, sodas, horchata (sweetened rice water), sports drinks, sweetened teas, or any other sugar-sweetened beverages) to a baby during the first year of life. Doing so could reinforce a baby's strong preference for sugary food and beverages and make it more difficult for her/him to learn to like healthy food such as vegetables, fruits, and plain water.
- Before choosing food for a baby, check the food label and ingredient list. Choose food with no or very limited amounts of added sugars and sodium (salt).
- Honey should NOT be given to children under 12 months old since it may cause a serious condition known as botulism.
- Supervise each child during feeding time and avoid offering food items that are a choking hazard such as nuts, grapes, popcorn, hot dogs, and hard candies.

### **Spoon, Cup, and Self-Feeding**

- Between 6 and 12 months, it is recommended to transition infants from using a bottle to a cup.
- By 12 months, the baby should be able to spoon feed herself/himself and hold a cup with both hands.
- At around 6 months, you can use a baby spoon to start offering pureed food, and water in a sippy cup held by an adult.
- At around 8 months, the baby will start to try to spoon-feed by herself/himself, and she/he most likely will be able to drink from a cup with less spilling.
- Babies prefer to use their hands to explore solid food. Although this is messy, it allows the child the opportunity to explore and learn to like healthy food. Encourage the baby to self-feed.

## Appendix 5. Toddler Feeding Guidelines: What to Feed During the Second Year of Life

### Developmentally Appropriate Feeding

- One- to 2-year-olds have small tummies and can only eat small portions at a time, so they should eat five to six times a day (this can be from meals and healthy snacks). Sliced fresh fruit (e.g., apples, peaches, strawberries), cooked vegetables or vegetables with healthy dip (e.g., carrots, broccoli, peas), and whole grain crackers with cheese are all good healthy snack options.
- By 1 year of age, children need about 1,000 calories every day. However, each child has different needs, so pay attention to her/his hunger and fullness signals. Examples of healthy meal patterns that provide adequate amounts of nutrients and calories for 1- to 2-year-olds can be found at: [http://www.fns.usda.gov/sites/default/files/cacfp/CACFP\\_childadultmealstandards.pdf](http://www.fns.usda.gov/sites/default/files/cacfp/CACFP_childadultmealstandards.pdf).
- Once a child is 1 year old, structure eating occasions—she/he needs to eat three meals and two to three healthy snacks at about the same time every day. Following a regular schedule will help each child learn when and what to expect to eat during the day. However, don't worry if a child decides to skip a meal or snack. What is important is for you to remember to offer the food and let her/him decide how much she/he wants to eat.
- As much as possible make sure that a child eats with others. Toddlers learn to eat table food and socialize during family-style meals.

### Milk

- The American Academy of Pediatrics recommends giving pasteurized whole cow's milk to 1- to 2-year-olds. However, a health care provider may recommend pasteurized reduced fat milk (2%) instead if there is a family history of obesity or heart problems.
- Offer cow's milk with no added sugars (e.g., no flavored milks). Added sugars may interfere with the development of a toddler's preferences for healthy food (such as vegetables and fruit) and may cause oral health problems, including dental cavities, and lead to extra calorie intake.
- Give a toddler cow's milk in a cup instead of a bottle. Offering milk in a cup instead of a bottle can help the toddler improve her/his motor skills.
- Too much milk may decrease a toddler's appetite for other food needed to meet nutritional needs. Keep the child's total milk consumption to no more than 2 cups (16 fluid ounces) per day while offering a variety of healthy food.
- At each meal, or as part of a snack, offer a toddler ½ cup (4 ounces) of milk.
- You can offer ½ to ¾ cup of yogurt in place of milk during meal or snack times, but serve only plain yogurt or yogurt without excessive total sugars (no more than 23 grams per 6 ounces). Plain yogurt can be mixed with fruits to increase its acceptance by a toddler.
- It is fine for breastfeeding to continue beyond one year if desired by parent and child. The frequency of breastfeeding and how long each nursing episode lasts typically decreases quite a bit during this time as a child consumes more solid food.
- Bottle feeding is strongly discouraged after 12 months. Try to wean a child from the bottle by the time she/he is 1 year old. Doing so will reduce the risk of dental cavities and other dental problems later on.

### Water, Fruit Juice, and Sugar-Sweetened Beverages

- Water is the best option to quench a child's thirst. A toddler needs about 2 cups of water per day to meet her/his fluids needs. Use a cup to offer water. Do not serve sugar-sweetened beverages (e.g., soft drinks, sports drinks, fruit drinks, energy drinks, sweetened teas). A toddler is still learning to accept and like healthy foods and beverages, and consuming sugar-sweetened beverages can interfere with this process.
- Whenever possible, offer fresh fruit instead of 100% fruit juice to a toddler since whole fruit provides less sugar and more fiber than juice. Avoid fruit canned in heavy syrup or with sugar added. Excessive consumption of fruit juice and fruit with added sugar can displace other nutritious foods and lead to dental cavities.
- If you decide to offer 100% fruit juice to a toddler, limit intake to no more than 4 ounces per day and offer it with a cup, not a bottle.
- Don't put a toddler to sleep with a bottle or sippy cup. This can cause dental cavities and other oral health problems.

## Dietary Diversity

- Plan meals and snacks to provide a variety of healthy food from all food groups (fruits, vegetables, meats/protein, dairy, whole grains).
- Include a variety of vegetables, especially dark green, red, and orange types. These vegetables are rich in many nutrients that are difficult to get in adequate amounts from other food. Exposure to a variety of vegetables will also help a child learn to like vegetables. Offer  $\frac{1}{4}$  to  $\frac{1}{2}$  cup of vegetables at most eating occasions.
- Offer a variety of fruits of different colors. Offer a child  $\frac{1}{4}$  to  $\frac{1}{2}$  cup of fruit at each eating occasion.
- Provide a variety of poultry, fish, meats, and meat alternates (e.g., beans, lentils, tofu) to the toddler. Offer  $\frac{1}{2}$  to 1 ounce of poultry, fish, meat or meat alternate at most meals and snacks. Avoid feeding a toddler food that is high in sodium (salt) such as processed meats like ham, lunch meats, and packaged breaded chicken and fish.

## Snacks

- Offer only nutritious snacks to a toddler. Remember that at this age, snacks are a very important source of nutrients for growth and development and help to shape eating habits for life. At most snacking occasions, include a fruit or a vegetable combined with food from the grain or dairy group.

## Whole Grains and Fiber, Omega 3 Fatty Acids

- Offer a toddler whole grain food, such as whole wheat bread, whole wheat pasta, corn tortillas, or brown rice. These food items are rich in fiber which is often missing from children's diets. Offer  $\frac{1}{2}$  to 1 slice of whole grain bread, or  $\frac{1}{4}$  to  $\frac{1}{2}$  cup of whole grain cereal or pasta at most meals and snacks.
- Offer a toddler deboned fish such as salmon, white tuna, and trout. Fish is a good source of healthy fats known as omega 3s that are very important for brain development.
- Choose food for a toddler prepared with healthy oils, such as olive, canola, corn, or sunflower oil.

## Limit Sugar and Sodium and Avoid Trans Fats

- Avoid adding too much salt or sugar to a toddler's food. Otherwise the child will develop a strong preference for salty and sweet foods and beverages. Remember that the food that you prepare can be seasoned with natural herbs and spices (e.g., basil, oregano, cumin, chili, ginger) instead of salt, sugar, honey, and other sweeteners.
- Read food labels and the list of ingredients when choosing already prepared food for the toddler. Avoid food that has high amounts of any type of added sugars, including high fructose corn syrup (e.g., sugar-sweetened beverages like Kool-Aid, sodas, sports drinks) or sodium (e.g., packaged macaroni and cheese) or that contains any amount of trans fats (e.g., French fries). The American Heart Association and the Academy of Nutrition and Dietetics both recommend that children under 2 years old should not consume any added sugars from food or beverages.
- Limit a toddler's consumption of snacks high in sodium and with added sugars. Remember that a toddler is still learning to develop eating habits for the rest of her/his life.

## Appendix 6. Food Safety for Infants and Toddlers

### Food Safety Guidelines for Caregivers of Infants and Toddlers: Preventing Foodborne Illnesses

#### PASTEURIZATION AND COOKING TEMPERATURES

- Do not offer a child unpasteurized juice, milk, or dairy products.
- Do not offer a child undercooked meats, poultry, eggs (e.g., runny eggs), or seafood. Recommended cooking temperatures can be found at [http://www.fsis.usda.gov/wps/portal/fsis/topics/food-safety-education/get-answers/food-safety-fact-sheets/safe-food-handling/safe-minimum-internal-temperature-chart/ct\\_index](http://www.fsis.usda.gov/wps/portal/fsis/topics/food-safety-education/get-answers/food-safety-fact-sheets/safe-food-handling/safe-minimum-internal-temperature-chart/ct_index).

#### FOUR STEPS TO KEEP FOOD SAFE FROM BACTERIA

- Always follow these four steps to keep food safe from bacteria:
  - CLEAN: Wash hands and food preparation/serving surfaces often. Fruits and vegetables should be thoroughly rinsed with warm water before offering to child.
  - SEPARATE: Keep raw meats, poultry, eggs, and fish separate from other ready-to-eat food.
  - COOK: Cook food to the proper internal temperatures (<https://www.foodsafety.gov/keep/charts/mintemp.html>).
  - CHILL: Keep cold food in the refrigerator and get other food into the refrigerator within two hours of being opened or prepared. More information available at: <https://www.foodsafety.gov/keep/index.html>.

#### COLD STORAGE GUIDELINES

- The following cold storage guidelines should be followed:
  - Expressed breast milk at [https://wicworks.fns.usda.gov/wicworks/Topics/FG/Chapter3\\_Breastfeeding.pdf](https://wicworks.fns.usda.gov/wicworks/Topics/FG/Chapter3_Breastfeeding.pdf), <http://www.cdph.ca.gov/programs/wicworks/Documents/NE/WIC-NE-EdMaterials-PumpingAndStoringBreastmilkForYourBaby.pdf>
  - Infant formula at [https://wicworks.fns.usda.gov/wicworks/Topics/FG/Chapter4\\_InfantFormulaFeeding.pdf](https://wicworks.fns.usda.gov/wicworks/Topics/FG/Chapter4_InfantFormulaFeeding.pdf), <http://www.cdph.ca.gov/programs/wicworks/Documents/NE/WIC-NE-EdMaterials-WhenYouFeedMeFormula.pdf>
  - Strained fruits and vegetables (prepared at home or from open jarred food): should be kept a maximum of two to three days in the refrigerator.
  - Strained meats (prepared at home or from open jarred food) and eggs: should be kept a maximum of one day in the refrigerator.
  - Meat and vegetable mixed dishes: should be kept a maximum of one to two days in the refrigerator.
  - The refrigerator temperature should be kept between 32 to 39 degrees Fahrenheit.

#### HANDLING OF LEFTOVERS

- At each feeding occasion, serve the portion that each child is likely to eat separate from the jar or bowl. Ensure separate bowls are used for each child. This way you can avoid cross-contamination between children and contaminating the unconsumed portion with each baby's saliva. The unused/untouched portion can be saved for a future feeding. Discard any unconsumed food that was part of the portion offered to the child.
- Always throw away any leftover formula or breast milk. Leftover formula or breast milk that has not been refrigerated can grow germs and make a baby sick. Do not feed a baby breast milk or formula left at room temperature for more than one hour.

Note: Adapted from FoodSafety.gov (<https://www.foodsafety.gov/risk/children/>).

\*On January 17, 2017, the CACFP changed the refrigerator storage regulation of expressed breast milk from 48 to 72 hours. These changes were made after the expert panel's full report was finalized. <https://www.fns.usda.gov/sites/default/files/cacfp/CACFP06-2017os.pdf>

### Food Safety Guidelines for Caregivers of Infants and Toddlers: Preventing Mouth Burns

- When microwaving solid food, do so in a dish and for short time intervals (e.g., test after 15 seconds on high). Let food stand for 30 seconds after microwaving and before offering to child; stir before serving.
- Before serving cooked food or re-heating solid food for a child, always test the temperature of the food to be offered. It should feel lukewarm.
- There is no medical reason for warming expressed human milk or formula. If you do so, don't warm by microwaving bottles with breast milk or formula. They don't heat evenly and can burn a child's mouth.
- You can heat bottles with breast milk or formula by putting the bottle under hot running water from the tap for about two minutes. You can also heat bottles by warming water in a pan on the stovetop, then removing it from the heat and putting the bottle in the water until it feels lukewarm.

Note: Adapted from FoodSafety.gov (<https://www.foodsafety.gov/risk/children/>) and California WIC Program ([https://wicworks.fns.usda.gov/wicworks/Sharing\\_Center/spg/CA\\_report2006.pdf](https://wicworks.fns.usda.gov/wicworks/Sharing_Center/spg/CA_report2006.pdf)).

### Food Safety Guidelines for Caregivers of Infants and Toddlers: Preventing Food Choking

- Supervise the infant during feeding time and avoid offering food items that are a choking hazard.
- Toddlers can choke on food items that have certain shapes (small and round) and/or textures (hard, very slippery or elastic). Examples of common choking hazards are grapes, nuts, peanuts, popcorn, hard candy, carrots, hot dogs, meatballs, and chewing gum. Avoid offering these food items, or cut the round food in half or quarters before serving.
- Sit each child in a high chair or secure to a seat for meals and snacks and supervise her/him at all times while eating. Remember that eating while walking may increase risk of choking.
- If you offer fish to the toddler, which is strongly recommended, make sure it's completely deboned.

Note: Guidelines adapted from AAP Committee on Nutrition (2013).

## Appendix 7. Food Allergy Considerations for Infants and Toddlers

- If the biological parent has allergies to any food items, they should talk to their child’s doctor about any precautions they need to take regarding the introduction of common allergenic food items (such as products with peanuts, eggs, dairy, or wheat) to their infant.
- Hydrolyzed or “hypoallergenic” infant formulas have not been found to help prevent food allergies in infants.
- Common allergenic food items can be offered to a baby when she/he is ready to eat solid food (usually between 4 and 6 months of age). These food items include dairy products such as yogurt or cow’s milk protein formula, eggs, soy, wheat, peanut butter, fish, and shellfish.
- Parents should introduce common allergenic food items at home before being given to the baby at the ECE setting. It should be offered to the baby after other solid food has been fed and tolerated. If no reaction occurs, then parents should gradually increase the amount at a rate of one new food every three to five days BEFORE allowing the baby to be served that food within the ECE setting.
- There is no need to avoid acidic food for baby, such as berries, tomatoes, citrus fruits, and vegetables that may cause a rash around the mouth or buttocks. The rash is the result of irritation from the acid in the food, not from an allergic reaction to the food.
- Some infants and toddlers do develop food allergies. If an infant or toddler develops signs of a food allergy (e.g., skin rashes, trouble breathing, nausea, vomiting, or loose stools in response to feeding) immediately alert the parent to seek medical care and advice right away. Parents may also be referred to an allergist/immunologist—a doctor with experience in food allergy—for further evaluation.
- A doctor may recommend a comprehensive evaluation and the development of a personalized plan to introduce solid food to the infant. Be certain to follow these plans carefully.

Note: Guidelines adapted from American Academy of Allergy, Asthma & Immunology (2015) and Australasian Society of Clinical Immunology and Allergy (2016).

### **About Healthy Eating Research**

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