



**Australian
Breastfeeding
Association**

Submission by the Australian Breastfeeding Association

To

CFAR Infant Feeding Summit

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The Australian Breastfeeding Association (ABA) welcomes the opportunity to make comment on the *Background to CFAR infant feeding summit research synthesis* document.

The Australian Breastfeeding Association is concerned that the *CFAR Infant Feeding Summit Research Synthesis* statement:

*“We believe that the **difference related to the timing of complementary feeding** in the NHMRC infant feeding guidelines and ASCIA feeding advice **is not significant** and call for the guidelines to be harmonised”*

is false and the 4 to 6 months recommendation for the introduction of complementary feeding by ASCIA is, in fact, **significantly different** from ‘the around 6 months’ recommendation of the NHMRC Infant Feeding Guidelines.

The infant feeding advice developed as part of the CFAR Infant Feeding Summit must reflect the NHMRC Infant Feeding Guidelines. Recommendations about the timing of complementary feeding, the introduction of solid foods, should be consistent with the NHMRC infant feeding guidelines.

The NHMRC Infant Feeding Guidelines (NHMRC, 2013) were developed to assist health professionals to promote and support exclusive breastfeeding to around 6 months and then the introduction of good-quality complementary foods. The guidelines state that infants should be *‘exclusively breastfed until around 6 months of age when solid foods are introduced’*.

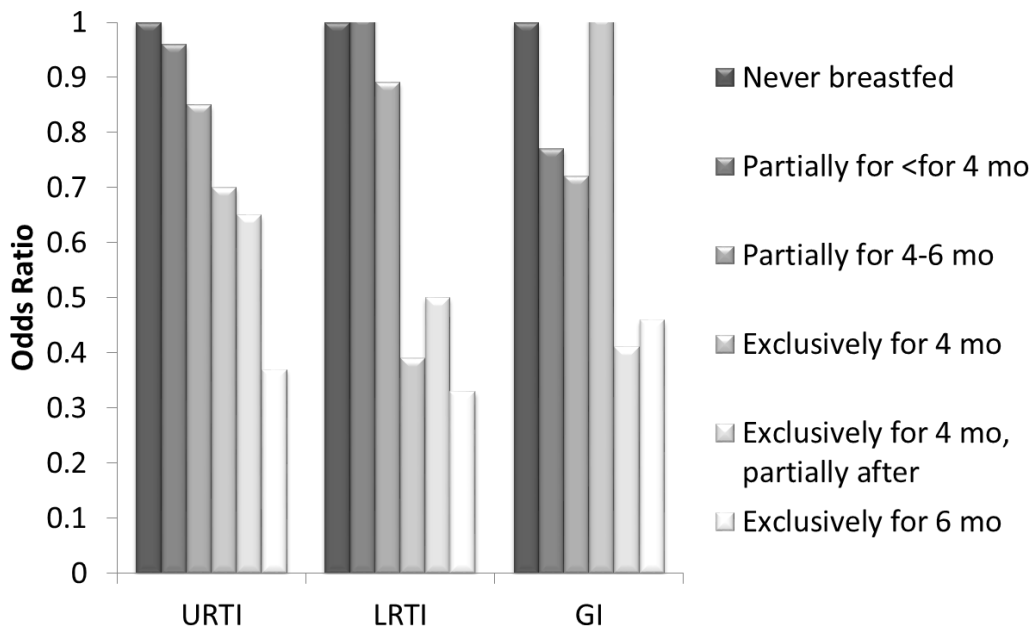
Despite this clear and unambiguous recommendation, there is confusion around infant feeding advice. Contradicting the WHO and NHMRC, ASCIA and other peak allergy bodies around the world recommend introducing complementary solid foods from 4 to 6 months.

This is creating a situation where families believe that the introduction of solids before 6 months is necessary to reduce allergies when, in fact, the evidence shows that stopping exclusive breastfeeding before 6 months puts them at increased risk of infections and overweight and obesity (Duijts, Jaddoe, Hofman & Moll, 2010; Li, Dee, Li, Hoffman, & Grummer-Strawn, 2014; Yan, Liu, Zhu, Huang & Wang, 2014).

There is a growing body of high-quality evidence that the premature introduction of solid foods is detrimental to the health outcomes of infants and young children, with these detrimental effects persisting into adulthood.

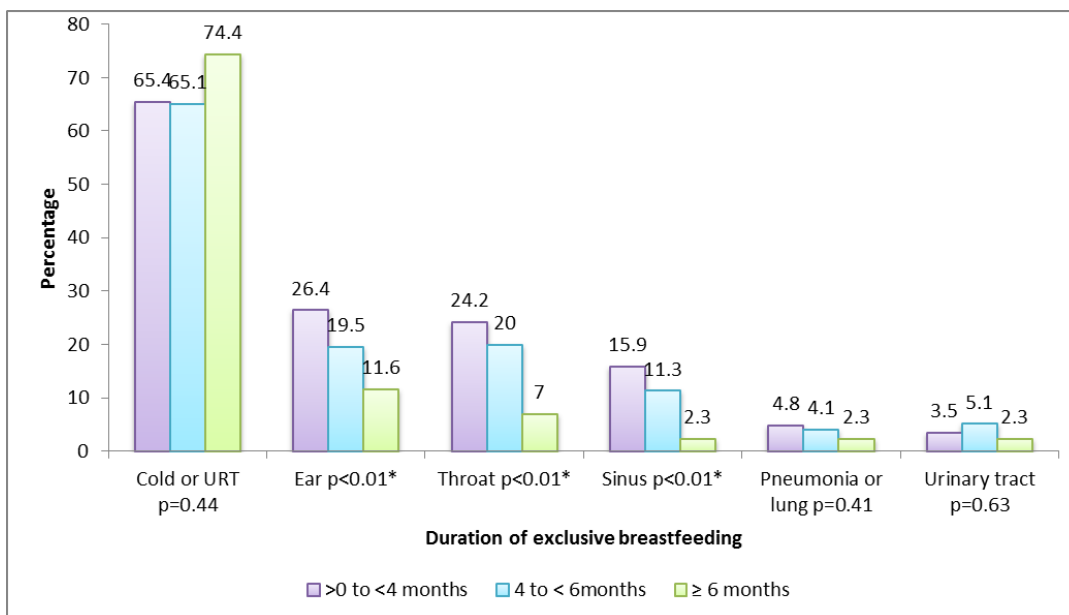
In a high-income, developed country like the Netherlands, there are significantly different rates of infection in the first six months of life, when 4 months and 6 months of exclusive breastfeeding are compared. There was a dose-dependent decrease in the rates of upper (URTI) and lower respiratory tract infections (URTI) and gastrointestinal infections (GI) with increased exclusivity of breastfeeding (Duijts, Jaddoe, Hofman & Moll, 2010). The longer infants were exclusively breastfed, the better the health outcome (Figure 1).

Figure 1. Duration of exclusive breastfeeding and risk of infectious diseases in the first 6 months of life. Generation R study in the Netherlands



A 2014 US study (Li, Dee, Li, Hoffman & Grummer-Strawn, 2014), using data from the Infant Feeding Practices Study II, also showed that being breastfed as a child provides ongoing protection against ear, throat and sinus infections beyond infancy. In this high-income, developed country, six-year-old children who had been exclusively breastfed to 6 months had significantly lower rates of these infections (Figure 2). Like the infants in the Netherlands the more exclusive and the longer the breastfeeding, the better the protection from infection. There was a dose-response effect with the greatest effect seen at 6 months of exclusive breastfeeding.

Figure 2. Prevalence of past-year infection among 6-year-old children in the US, according to the duration of breastfeeding.



Australian infants are being introduced to solids well before 6 months, the contradictory infant feeding advice is contributing to this behaviour. The latest nation-wide survey of infant feeding found, astonishingly, that 9.7% of Australian infants were being introduced to solids at 3 months, 35.3% at 4 months and 70.2% at 5 months (Australian Institute of Health and Welfare, 2011).

This is of concern because these infants are being put at increased risk of infections in infancy and childhood (Duijts, Jaddoe, Hofman & Moll, 2010; Li, Dee, Li, Hoffman, & Grummer-Strawn 2014) and overweight and obesity (Yan, Liu, Zhu, Huang & Wang, 2014) as they grow, for little or no benefit with regard to food allergy prevention.

It is well-known that despite mothers being advised of an appropriate age at which solids should be introduced into their babies' diets, inevitably solids are introduced earlier. This would be another serious concern if infant feeding advice included a 4 to 6 months recommendation. It would mean even more Australian infants would be introduced to solids before 4 months.

There is evidence from a recent systematic review with meta-analysis that the introduction of solids before 4 months to exclusively breastfed infants increases the risk of overweight and obesity in childhood, over and above the increase in overweight and obesity seen when solids are introduced between 4 and 6 months (Wang et al 2016).

Disturbingly, the introduction of solid foods before 4 months has also been shown to increase the risk of food allergy at 2 years. A study by Grimshaw et al (2013) showed significantly more food-allergic infants in the UK were introduced to complementary foods before and including 16 weeks compared to infants introduced to foods later, 35% vs 14% (p=0.011).

Moving the infant feeding advice to include 4 months risks the even earlier introduction of complementary foods, an increased risk of overweight and obesity and increased food allergy in children.

The question of whether the rise in allergies, particularly food allergies, can be explained solely by the timing of the introduction of solids at 6 months has not been resolved. Professor Katie Allen states:

'Changes in the timing of food introduction may contribute to but unlikely to completely explain recent increases in the prevalence of food allergy. Existing studies show that some children will develop food allergy despite early introduction of potentially allergenic foods while others do not develop food allergy despite the delayed introduction of these foods, providing evidence that other environmental or genetic factors play a role in the development of food allergy.' (Koplin & Allen, 2013)

'There is as yet insufficient evidence to inform the question as to whether changing in feeding practices may contribute to the rise in food allergy. More evidence about the role of infant diet in the development of food allergy will be become available in the next few years with the impending completion of several randomized controlled trials around the world.' (Koplin & Allen, 2013)

The joint position statement of the Canadian Society of Allergy and Clinical Immunology and the Canadian Paediatric Society (Chan et al 2014) also stated that:

While there is no evidence that delaying the introduction of any specific food beyond six months of age helps to prevent allergy, the protective effect of early introduction of potentially allergenic foods (at four to six months) remains under investigation. Recent research appears to suggest that

regularly ingesting a new, potentially allergenic food may be as important as when that food is first introduced.

Allergists around the world have been waiting on the results of randomised controlled trials, in particular the Learning Early About Peanuts (LEAP) and Enquiring About Tolerance (EAT) studies, which were designed to look at whether the 'early' introduction of complementary foods reduces the risk of food allergies.

The LEAP study (Du Toit et al., 2015) did show that the introduction of peanuts to high-risk infants before they turned one, significantly decreased the incidence of peanut allergy in 'at risk' children. However, these infants were between 4 and 11 months old when they were first introduced to peanuts. This means that the 'window of opportunity' for the introduction of peanuts is somewhere from 4 to 11 months which would clearly fit in with the NHMRC recommendation to exclusively breastfeed to around 6 months and then introduce solids.

The results of the LEAP study confirm that:

- there is no need to introduce peanuts before 6 months to gain the benefit of the 'early' introduction of peanuts to reduce peanut allergies and as such
- there would be no need to have a separate set of infant allergy feeding guidelines based on its findings.

The EAT study (Perkin et al., 2016) looked at whether the very early introduction of allergenic foods at 3 months changed the risk of being allergic to the foods at 1 and 3 years of age in infants that were not at high risk for allergy.

In the EAT intention-to-treat analysis, food allergy to one or more of the six intervention foods developed in 7.1% of the children in the standard introduction group and in 5.6% of those in the early introduction group (3 months) and this difference was not significantly different. The analysis was hampered by a very low compliance by caregivers to introduce solids early, with only 31.9% adherence in the early introduction group.

Using an intention-to-treat analysis, the EAT study failed to show that the very early introduction of allergenic foods is effective in reducing food allergies in young children.

If caregivers did adhere to the protocol there were some differences in the rates of peanut and egg allergies, but poor adherence means that such protocols would not be achievable with the general population without onerous clinical support.

The EAT study researchers also claimed their protocols for the introduction of allergenic foods was safe because there were no episodes of anaphylaxis, no effect on breastfeeding and no effect on growth. This is a naïve and limited definition of 'safe', given the increased risks of infections in infancy and childhood, overweight and obesity and even food allergies as a consequence of the premature introduction of solids at 3 months.

The Solids Timing for Allergy Research (STAR) study looked at whether the introduction of egg at 4 months reduced the risk of infants (with eczema) having an egg allergy at 12 months. No significant difference in allergy to egg was found between the group exposed to egg from 4 months and the control group (Palmer et al., 2013).

Of the randomised controlled trials published so far:

- the LEAP study achieved peanut tolerance with introduction anywhere between 4 and 11 months of age
- the EAT study failed to show a reduction in food allergies despite the very early introduction of allergenic foods from 3 months
- the STAR study introduced egg to 4-month-old infants with a nonsignificant reduction in egg allergy incidence.

The results of the randomised controlled trials are not a ringing endorsement for the premature introduction of food to reduce food allergy and certainly not enough to recommend the introduction of complementary foods between 4 to 6 months (to reduce allergies)

It has been claimed by some allergists that exclusive breastfeeding increases the risk of allergy. However, the latest, well-designed research on exclusive breastfeeding, sensitisation to allergens and allergy in childhood is showing no such detriment.

A recent study found that breastfeeding neither increased nor decreased the risk of sensitisation to allergens or associated diseases (current eczema, wheeze/asthma, and allergic rhinitis) in 'at risk' infants up to 7 years of age in Copenhagen (Jelding-Dannemand et al., 2015).

A large Japanese study of 43,000 children has shown that exclusive breastfeeding for 6–7 months was associated with a decreased risk of hospitalisation for asthma in children aged 6 to 42 months. Each month of breastfeeding was associated with a 4 % decreased risk of hospitalisation for asthma (Yamakawa, Yorifuji, Kato, Yamauchi, & Doi, 2014).

Evidence is accumulating that optimal gut development, function and microbiome colonisation is crucial to reduce allergies in infants. A 2015 review outlined the relationship between the roles of respiratory, gut, and environmental microbiomes in asthma and allergic disease development, manifestation, and attenuation and recognised that diet '*represents a strong selective pressure on the gut microbiome, a factor that likely explains the increased risk of allergy associated with formula feeding*' (Fujimura & Lynch, 2015).

Breastfeeding, in particular exclusive breastfeeding, is crucial for optimal gut development and function and for the establishment of the microbiome.

'Initial colonization of the infant gut by microbes sets the stage for the lifelong, relatively stable adult microbiome. Infants rely on colonization to complete development of the immune system and gastrointestinal tract. The first days and weeks of life represent a crucial window of opportunity for shaping the development of the gastrointestinal tract and immune system, as well as the adult microbiome. The nature of infant environmental exposures, acting through the microbiome, affects the likelihood of developing childhood and adult diseases such as obesity, food allergy, and inflammatory bowel disease (IBD).'' (Houghteling and Walker, 2015).

So, has a breastfeeding, gut microbiome, allergy connection been established? The evidence is emerging. A US study (WHEALS) has shown that 1-month-old infants who were being breastfed had a decreased risk of developing allergic-like response to pets. Both breastfeeding and allergic-like response to pets were significantly related to the composition of the gut microbiome (Sitarik, Havstad, Levin, Fujimura, Wegienka, Zoratti et al., 2015).

There are many compelling reasons why infants should be exclusively breastfed to 6 months. Six months of exclusive breastfeeding, with continued breastfeeding as good quality complementary foods are introduced:

- provides ideal nutrition and supports normal growth and development
- reduces morbidity and mortality in infants
- reduces the risk of overweight and obesity in later life and
- ensures the optimal development and maturation of the gut and the gut microbiome

To ensure the optimal health and development of Australian infants, the infant feeding advice developed as part of the CFAR Infant Feeding Summit must reflect the evidence-based NHMRC Infant Feeding Guidelines recommendation that infants be ‘exclusively breastfed until around 6 months of age when solids are introduced’.

Following are ABA specific responses to ASCIA statements in the corresponding tables

Organisation	Statements Regarding Timing of Complementary Feeding
WHO (2003)	“... from the age of 6 months with continued breastfeeding up to 2 years of age or beyond”.
NHMRC (2012)	‘Introducing solid foods at around 6 months is necessary to meet the infant’s increasing nutritional and developmental needs’ (p86).
ASCIA (2016)	“4 to 6 months when your infant is developmentally ready to start solids”
Organisation	Statements Regarding First Foods
WHO (2003)	“Nutritionally adequate and safe complementary feeding...”
NHMRC (2012)	“as long as iron-rich foods are included in first foods, foods can be introduced in any order and at a rate that suits the infant” (p87) “Delaying the introduction of solid foods, including allergenic foods, after the age of 6 months may increase the risk of developing allergic symptoms” (p87)
ASCIA (2016)	“introduce foods according to what the family usually eats, regardless of whether the food is considered to be a common food allergen.” “raw egg is not recommended.” (Note: food safety advice) “There is good evidence that for infants with severe eczema and/or egg allergy, that regular peanut intake before 12 months of age can reduce the risk of developing peanut allergy. If your child already has an egg allergy or other food allergies or severe eczema, you should discuss how to do this with your doctor”.

Responses to ASCIA 2016 statements

Statement: “4 to 6 months when your infant is developmentally ready to start solids”

NOT justified by evidence

Developmental readiness for solids

When is an infant physically ready and able to begin eating solid foods? What developmental milestones and feeding behaviours need to be attained before solids can be introduced? At what ages are these milestones and how individual is readiness for solids?

Developmental milestones are broad and the stages of development are unique to each infant. Carruth & Skinner (2002) undertook a prospective cohort study to monitor and define the patterns of development of infant gross, fine and oral motor skills related to feeding from 2–24 months of age. The feeding behaviours that were identified and characterised around the period from 4–8 months are summarised in Table 1. As can be seen in Table 1 concurrent development of motor skills is interrelated and supports the transition from the infant being fed to self-feeding.

Importantly for this discussion, major developmental milestones, feeding and self-feeding behaviours emerged between 5 and 7 months.

For example, at 5 to 7 months, children could sit in the care-taker’s lap without assistance, reach for a spoon when hungry and use the tongue to move soft food and liquid to the back of the mouth for swallowing. These movements require a degree of head and trunk stability which frees the arm and hands for maneuvering food toward the mouth, enhances swallowing and/or reduces the potential for choking that occurs if the infants were in a supine position. (Carruth & Skinner 2002, p94)

Carruth & Skinner (2002) found that self-feeding behaviours occurred within expected age ranges, although there were a broad range of ages at which individual infants and children demonstrated particular self-feeding skills. As a consequence, infant feeding practices should take into account the developmental readiness of an infant before solids are introduced into the diet.

Table 1 Children’s motor development (gross, fine and oral) related to feeding behaviours around 6 months of age. Data obtained from Carruth BR & Skinner JD 2002, Feeding behaviors and other motor development in healthy children (2-24 months). *J Am Coll Nutr* 21: 88-96.

Behaviour	Mean age \pm SD
Opens mouth when spoon approaches or touches lips	4.46 \pm 1.37 months
Tongue moves gently back and forth as food enters mouth	4.85 \pm 1.58 months
Tongue used to move food to back of mouth to swallow	4.95 \pm 1.27 months
Reaches for spoon when hungry	5.47 \pm 1.44 months
Sitting in caregiver’s lap without help	5.54 \pm 2.08 months
Keeps food in mouth and is not refeed	5.72 \pm 1.58 months
Brings top lip down on spoon to remove food	7.73 \pm 2.23 months
Eats finger foods without gagging	8.44 \pm 1.53 months
Eats food with tiny lumps without gagging	8.70 \pm 2.03 months

Statement: “introduce foods according to what the family usually eats, regardless of whether the food is considered to be a common food allergen.”

Justified by evidence

Statement: “raw egg is not recommended.” (Note: food safety advice)

Justified by evidence

“There is good evidence that for infants with severe eczema and/or egg allergy, that regular peanut intake before 12 months of age can reduce the risk of developing peanut allergy. If your child already has an egg allergy or other food allergies or severe eczema, you should discuss how to do this with your doctor”.

Justified by evidence, but this statement and the evidence supporting it does NOT support the introduction of complementary foods at 4 months.

Organisation	Statements Regarding Breast Milk Substitutes
WHO (2009) (18)	“A minority of infants will need to be fed on breast-milk substitutes, short term or long term.” (p56)
NHMRC (2012)	<p>“For infants with a strong history of atopy, there is limited evidence that hydrolysed formula, in comparison with cow’s milk formula, reduces infant and childhood allergy. There is no evidence that partially hydrolysed infant formula prevents allergic disease when used for supplementary feeds in hospitals, and widespread use for this purpose may undermine breastfeeding.” (p81).</p> <p>“The Royal Australasian College of Physicians (RACP) recommends the use of extensively hydrolysed infant formula in infants with proven cow’s milk allergy or cow’s milk protein intolerance who are not breastfed.” (p81).</p> <p>“... If breast feeding is discontinued for any reason, there is no advantage in using special formulas, except under medical supervision” (p82)</p>
ASCIA (2016)	‘Based on a recently published review of studies, there is no consistent convincing evidence to support a protective role for partially hydrolysed formulas (usually labelled 'HA' or Hypoallergenic) or extensively hydrolysed formulas for the prevention of eczema, food allergy, asthma or allergic rhinitis (hay fever) in infants or children’.

Response to ASCIA 2016 statements

Statement: ‘Based on a recently published review of studies, there is no consistent convincing evidence to support a protective role for partially hydrolysed formulas (usually labelled 'HA' or Hypoallergenic) or extensively hydrolysed formulas for the prevention of eczema, food allergy, asthma or allergic rhinitis (hay fever) in infants or children’.

Justified by evidence

Organisation	Statements Regarding Breastfeeding Recommendations
WHO) (2003)	“...exclusive breast feeding for the first 6 months of life (180 days)” “...breastfeeding continues for up to two years and beyond”.
NHMRC (2012)	“Breast feeding is beneficial for infants, mothers, families and society, and is viewed as the biological and social norm for infant and child feeding” “Breastfeeding exclusively to around 6 months is compatible with achieving the lowest rates of allergic disease”
ASCIA (2016)	“Breastfeeding is recommended for at least 6 months and for as long as mother and infant wish to continue. There is no consistent evidence that breastfeeding is effective for the prevention of allergic disease. However, breastfeeding is recommended for the many benefits it provides to mother and infant.” “Breastfeeding during the period that complementary “solid” foods are first introduced to infants from 4-6 months may help reduce the risk of the infant developing allergies, although evidence for this is low.”

Responses to ASCIA 2016 statements

Statement: “Breastfeeding is recommended for at least 6 months and for as long as mother and infant wish to continue. There is no consistent evidence that breastfeeding is effective for the prevention of allergic disease. However, breastfeeding is recommended for the many benefits it provides to mother and infant.”

NOT justified

The first sentence in this statement is meaningless and goes to support the allergist agenda, to introduce complementary foods by 4 months, by **intentionally omitting** the term ‘**exclusive**’. World and Australian health authorities recommend exclusive breastfeeding for 6 months for the well-documented improvement in health and developmental outcomes for all infants, children and breastfed adults. Any breastfeeding, which is what this sentence implies, is recommended for at least 12 months and preferably 2 years.

As to the second sentence in this statement, the inconsistency in the evidence may be in part due to different definitions of breastfeeding: any, partial, full and exclusive. Also, very few women actually meet the recommendations, so the full impact of optimal breastfeeding may be lost due to the use of artificial baby milk and premature introduction of complementary foods, particularly in Western countries.

More good quality allergy research needs to be done which looks at infants who truly exclusively breastfeed till 6 months and their short-term and long-term allergy outcomes.

Statement: “Breastfeeding during the period that complementary “solid” foods are first introduced to infants from 4-6 months may help reduce the risk of the infant developing allergies, although evidence for this is low.”

Continued breastfeeding – justified, introducing solids at 4 months – not justified

Continued breastfeeding while complementary foods and allergens are introduced is important for the ongoing nutritional needs and normal developmental outcomes of infants. However, introducing complementary foods at 4 months increases the risk of infections and later overweight and obesity and there is no evidence from recent randomized controlled trials (LEAP, EAT, STAR) that allergy in young children is reduced when allergens are introduced at 4 months.

References

Australian Institute of Health and Welfare 2011, *2010 Australian National Infant Feeding Survey: Indicator Results*. Canberra: AIHW.

Carruth BR & Skinner JD 2002, Carruth, B. R., & Skinner, J. D. (2002). Feeding behaviors and other motor development in healthy children (2–24 months). *Journal of the American College of Nutrition*, 21(2), 88-96.

Duijts, L., Jaddoe, V. W., Hofman, A., & Moll, H. A. (2010). Prolonged and exclusive breastfeeding reduces the risk of infectious diseases in infancy. *Pediatrics*, 126(1), e18-e25.

Du Toit, G., Roberts, G., Sayre, P. H., Bahnson, H. T., Radulovic, S., Santos, A. F., ... & Lack, G. (2015). Randomized trial of peanut consumption in infants at risk for peanut allergy. *New England Journal of Medicine*, 372(9), 803-813.

Fujimura, K. E., & Lynch, S. V. (2015). Microbiota in allergy and asthma and the emerging relationship with the gut microbiome. *Cell Host & Microbe*, 17(5), 592-602.

Grimshaw, K. E., Maskell, J., Oliver, E. M., Morris, R. C., Foote, K. D., Mills, E. C., ... & Margetts, B. M. (2013). Introduction of complementary foods and the relationship to food allergy. *Pediatrics*, 132(6), e1529-e1538.

Jelding-Dannemand, E., Schoos, A. M. M., & Bisgaard, H. (2015). Breast-feeding does not protect against allergic sensitization in early childhood and allergy-associated disease at age 7 years. *Journal of Allergy and Clinical Immunology*.

Houghteling, P. D., & Walker, W. A. (2014). Why is initial bacterial colonization of the intestine important to the infant's and child's health? *Journal of Pediatric Gastroenterology and Nutrition*. 60, 294–307.

Koplin, J. J., & Allen, K. J. (2013). Optimal timing for solids introduction—why are the guidelines always changing?. *Clinical & Experimental Allergy*, 43(8), 826-834.

Li, R., Dee, D., Li, C. M., Hoffman, H. J., & Grummer-Strawn, L. M. (2014). Breastfeeding and risk of infections at 6 Years. *Pediatrics*, 134(Supplement 1), S13-S20.

NHMRC 2013, *Infant Feeding Guidelines: Summary*. Canberra, National Health and Medical Research Council.

Palmer, D. J., Metcalfe, J., Makrides, M., Gold, M. S., Quinn, P., West, C. E., ... & Prescott, S. L. (2013). Early regular egg exposure in infants with eczema: a randomized controlled trial. *Journal of Allergy and Clinical Immunology*, *132*(2), 387-392.

Perkin, M. R., Logan, K., Tseng, A., Raji, B., Ayis, S., Peacock, J., ... & Flohr, C. (2016). Randomized trial of introduction of allergenic foods in breast-fed infants. *New England Journal of Medicine*.

Sitarik, A. R., Havstad, S., Levin, A. M., Fujimura, K., Wegienka, G. R., Zoratti, E. M., ... & Johnson, C. C. (2015). The infant gut microbiome mediates the association between breastfeeding and allergic-like response to pets in children. *Journal of Allergy and Clinical Immunology*, *135*(2), AB154.

Wang, J., Wu, Y., Xiong, G., Chao, T., Jin, Q., Liu, R., ... & Yang, X. (2016). Introduction of complementary feeding before 4 months of age increases the risk of childhood overweight or obesity: a meta-analysis of prospective cohort studies. *Nutrition Research*.

Yamakawa, M., Yorifuji, T., Kato, T., Yamauchi, Y., & Doi, H. (2014). Breast-feeding and hospitalization for asthma in early childhood: a nationwide longitudinal survey in Japan. *Public Health Nutrition*, 1-6. doi:10.1017/S1368980014002407

Yan, J., Liu, L., Zhu, Y., Huang, G., & Wang, P. P. (2014). The association between breastfeeding and childhood obesity: a meta-analysis. *BMC Public Health*, *14*(1), 1267.