

Position of the Academy of Nutrition and Dietetics: Promoting and Supporting Breastfeeding



ABSTRACT

It is the position of the Academy of Nutrition and Dietetics that exclusive breastfeeding provides optimal nutrition and health protection for the first 6 months of life, and that breastfeeding with complementary foods from 6 months until at least 12 months of age is the ideal feeding pattern for infants. Breastfeeding is an important public health strategy for improving infant and child morbidity and mortality, improving maternal morbidity, and helping to control health care costs. Research continues to support the positive effects of human milk on infant and maternal health, as it is a living biological fluid with many qualities not replicable by human milk substitutes. Recent research advancements include a greater understanding of the human gut microbiome, the protective effect of human milk for premature infants and those born to women experiencing gestational diabetes mellitus, the relationship of breastfeeding with human immunodeficiency virus, and the increased ability to characterize cellular components of human milk. Registered dietitian nutritionists and nutrition and dietetics technicians, registered, should continue efforts to shift the norm of infant feeding away from use of human milk substitutes and toward human milk feeds. The role of registered dietitian nutritionists and nutrition and dietetics technicians, registered, in breastfeeding promotion and support, in the context of the professional code of ethics and the World Health Organization's International Code of Marketing of Breast-Milk Substitutes, are discussed in the "Practice Paper of the Academy of Nutrition and Dietetics: Promoting and Supporting Breastfeeding," published on the Academy website at: www.eatright.org/positions.

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POSITION STATEMENT

It is the position of the Academy of Nutrition and Dietetics that exclusive breastfeeding provides optimal nutrition and health protection for the first 6 months of life and that breastfeeding with complementary foods from 6 months until at least 12 months of age is the ideal feeding pattern for infants. Breastfeeding is an important public health strategy for improving infant and child morbidity and mortality, improving maternal morbidity, and helping to control health care costs.

THIS POSITION PAPER reaffirms and updates the Academy of Nutrition and Dietetics' 2009 position paper on breastfeeding¹ and supports the "Practice Paper of the Academy of Nutrition and Dietetics: Promoting and Supporting Breastfeeding,"² as well as several other Academy position papers available at the Academy website (www.eatright.org/positions). Additional work has quantified the costs of, and risks related to, not breastfeeding, and federal initiatives have continued to strengthen efforts to increase breastfeeding rates at the national, regional, and local level. The role of the registered dietitian nutritionist (RDN) and nutrition and dietetics

technician, registered (NDTR) in breastfeeding promotion and support is touched on here and expanded on in the accompanying practice paper.²

Human milk is considered the optimal form of infant nutrition for nearly all infants, as the risks of not receiving human milk include increased rates of infant and maternal morbidity and mortality, increased health care costs, and significant economic losses to families and employers.^{1,3-6} Therefore, breastfeeding continues to be recommended by multiple national and international health organizations and agencies.^{1,3,7} For example, in the United States, the American Academy of Pediatrics continues to recommend that infants be exclusively breastfed to 6 months of age, at which point appropriate complementary foods should be introduced and breastfeeding should continue to at least the first birthday or as long as

mutually desired by mother and infant.³ The World Health Organization extends this for 2 years or beyond.⁷ Several notable advancements have occurred since publication of the 2009 position paper.¹ Recent research advancements include a greater understanding of the human gut microbiome, the protective effect of human milk for premature infants and those born to women with gestational diabetes mellitus (GDM), the relationship of breastfeeding with human immunodeficiency virus, the increased ability to characterize cellular components of human milk, and the costs and risks associated with not breastfeeding.⁸⁻¹² Similarly, the role of the RDN/NDTR remains to promote and support breastfeeding.²

HUMAN MILK COMPOSITION

Human milk contains factors that serve both nutritive and non-nutritive

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functions,^{1,3,8,10,11} and it has been well characterized that the relatively low protein content and high bioavailability of essential minerals are optimally suited to the immature digestive system of the young infant.^{1,3} Human milk provides maternal immune factors, appetite-regulating hormones, and factors thought to support development of the healthy infant gut microbiome.^{10,11} Mammary-gland-derived stem cells have been discovered recently, and this is considered an extraordinary finding with great potential to explain some of the effects on infant health.¹⁰ In addition to factors in human milk that provide direct immunity, milk oligosaccharides are thought to provide indirect immunity, by both serving as substrate for beneficial gut bacteria, stimulating infant gut production of secretory immunoglobulin A, and by interfering directly with pathogen binding.⁸ This functionality of human milk oligosaccharides is a current focus of researchers working to improve outcomes among infants fed with human milk substitutes.⁸ RDNs/NDTRs will continue to review the latest science to be current when working with breastfeeding families and consider completing coursework as described in the practice paper.²

Although human milk is optimal in most situations, if infant iron stores are found to be inadequate, such as in situations of low birth weight or prematurity, in some less-developed countries, or when maternal prenatal iron status was low, it is recommended that the addition of iron drops begin before the introduction of iron-rich complementary foods (at approximately 6 months).³ In addition, breastfed infants should receive supplemental fluoride after 6 months of age if living in areas where the local water source is not fluoridated.³ Vitamin K injections are recommended for all newborns, but should be delayed until after the first breastfeed (but no more than 6 hours postpartum). Finally, although limited research suggests that relatively high doses of maternal vitamin D supplementation (approximately 5,000 IU/day for 28 days or a one-time dose of 150,000 IU)¹³ may render direct supplementation of the infant unnecessary, there is currently insufficient evidence to support deviation from

Institute of Medicine and American Academy of Pediatrics recommendations that breastfed infants receive 400 IU vitamin D per day.^{3,14} In addition to these micronutrient concerns, guidance is required in situations in which mothers are experiencing specific viral illnesses, smoking, using legal and/or illicit drugs, poor nutritional status/dietary intake, and those who experienced gestational diabetes.^{1,3,15,16}

INFANT AND MATERNAL HEALTH OUTCOMES

It is important to note that it can be a challenge to rate the strength of breastfeeding research, secondary to inconsistent definitions of breastfeeding (eg, exclusivity, frequency, intensity, duration), and unethical to conduct the randomized controlled trials necessary to answer many questions.^{3,17,18} However, systematic reviews and meta-analyses continue to indicate that infant feeding mode is associated with infant and maternal health outcomes.¹⁷⁻²³ The [Figure](#) outlines well-established and currently debated health outcomes related to infant feeding mode, framed to convey risks of not breastfeeding instead of benefits of breastfeeding, as it has been noted that this framing may assist with recasting human milk substitutes as being inferior to human milk.^{4,5} Acute infant health outcomes associated with human milk, including reduced risk of gastrointestinal infections, respiratory infections, and otitis media, are well established and continue to drive breastfeeding initiatives.^{1,3,18,24-28} Although a relationship between infant feeding mode and other health outcomes has been established, many require continued exploration.

For example, preterm infants are at increased risk of developing necrotizing enterocolitis compared with term infants, and human milk feedings reduce the incidence.⁹ Studies show an absolute difference of 5% in the risk of necrotizing enterocolitis when comparing outcomes between preterm infants receiving human milk or a substitute. This is considered a meaningful clinical difference due to the high case-fatality rate of necrotizing enterocolitis.²⁶ Milk from the infant's own mother contains bioactive components and immunomodulatory factors, and is the first choice for feeding

preterm infants.^{9,29} Although mother's own milk is desirable, donor milk is recommended when mother's own milk is not available^{9,29} (use of donor milk is expanded upon in the practice paper²). Because of the nutritional requirements of preterm infants for increased amounts of protein and minerals during periods of rapid growth, it is recommended that human milk provided to very-low-birth-weight infants (<1,500 g) be fortified during the hospital stay.^{3,9} Although commercial fortifiers are readily available with standardized mixing instructions, there is increased interest in customizing fortification based on analysis of individual mother's milk to provide the correct amount of protein and energy for optimal growth.⁹

Longer-term, but less well-established, effects of not breastfeeding include increased risk of type 1 diabetes mellitus, celiac disease, asthma, sudden infant death syndrome, and development of overweight or obesity.^{21,26,27,30} Although unable to show cause and effect, well-designed meta-analyses of time-series data can increase confidence in the stability of associations by evaluating repetition across multiple studies. For example, secondary to the strength of the protective effect of human milk against developing sudden infant death syndrome, illustrated by a recent meta-analysis, it has been recommended that breastfeeding promotion be incorporated into the US sudden infant death syndrome reduction campaign.^{21,27,30} For mothers, immediate and early effects of breastfeeding include reduced risk of hemorrhage after delivery, stress reduction, delay in ovulation, reduced blood pressure, reduced risk of postpartum depression, greater postpartum weight loss, and possibly greater infant bonding.^{1,4,6,27,31} Long-term effects include reduced risk of breast and ovarian cancers, hypertension, and type 2 diabetes.^{12,22,32,33} However, the relatively weak study designs used to evaluate some of these outcomes contribute to their continued debate.^{3,26}

Infant Feeding Trends

Although monitoring by the Center for Disease Control and Prevention indicates that national breastfeeding objectives have not yet been met, the

Health outcomes	Strong evidence	Relationship established; needs additional study
Infant health outcomes		
Nonspecific gastrointestinal infections, upper and lower respiratory tract infections	X	
Otitis media	X	
Atopic dermatitis		X
Autoimmune disorders (type 1 diabetes mellitus, celiac disease)		X
Sudden infant death syndrome	X	
Necrotizing enterocolitis, among premature and low-birth-weight infants	X	
Cognitive development		X
Asthma		X
Later overweight or obesity		X
Comorbidities of excess weight (type 2 diabetes, cardiovascular disease, heart disease, hypertension, high cholesterol)		X
Maternal health outcomes		
Postpartum hemorrhage	X	
Delayed ovulation	X	
Hypertension		X
Postpartum weight status		X
Infant bonding		X
Postpartum depression	X	
Cancer (postmenopausal breast/ovarian)		X
Premenopausal breast cancer		X
Comorbidities of excess weight (hypertension, type 2 diabetes mellitus)		X

Figure. Risks associated with suboptimal breastfeeding (lack of any breastfeeding, partial breastfeeding, or short duration of any breastfeeding).

nation continues to move in a positive direction, and federal-level initiatives, such as the Break Time for Nursing Mothers law and breastfeeding-related preventative services included in the Affordable Care Act and the breastfeeding peer counselor program offered by the Special Supplemental Nutrition Program for Women, Infants, and Children, have continued to target increasing breastfeeding rates.^{24,25,28} The Table outlines several Healthy People 2020 breastfeeding objectives, along with the most current national rates. Although these recent data

reflect continued improvements in breastfeeding behaviors, disparities in initiation, duration, and exclusivity remain of concern, and RDNs/NDTRs continue to play a critical role in support and promotion.^{2,28}

Social Determinants

Determinants of breastfeeding initiation, and continuation, remain largely unchanged since publication of the previous position paper.¹ Women without a high school diploma, younger women, those who are obese,

low-income women, and those living in certain regions of the United States, continue to be less likely to initiate breastfeeding as compared with their peers, and are less likely to maintain breastfeeding if initiated.²⁸ Those mothers least likely to breastfeed are also those most likely to suffer from many of the acute and chronic diseases associated with a lack of breastfeeding (Figure). For example, non-Hispanic black women are least likely to initiate breastfeeding, but they, and their children, are at higher risk for developing overweight/obesity, type 2

Table. Healthy People 2020 breastfeeding objectives and most recent national rates

Increase the proportion of infants who are breastfed	2020 Target rates ²⁴ (%)	National breastfeeding rates, 2011 ²⁵ (%)
Ever	81.9	79.2
At 6 mo	60.6	49.4
At 12 mo	34.1	26.7
Exclusively through 3 mo	46.2	40.7
Exclusively through 6 mo	25.5	18.8

diabetes, cardiovascular disease, and some cancers.²⁴

The literature is replete with examples of the multiple influences on a mother's decision to breastfeed, and evidence of these continued disparities in breastfeeding rates suggest that these influences often outweigh maternal desire.^{28,34} However, emerging research is revealing areas for targeted intervention within specific populations.³⁵ For example, maternity care practices that align with the Baby-Friendly Hospital Initiative, a joint initiative of the World Health Organization and the United Nations Children's Fund targeting excellence in mother–baby care, were found to be differentially effective, depending on maternal race/ethnicity.³⁵ Mothers who breastfed for at least 10 weeks were more likely to have experienced breastfeeding within the first hour postpartum, have been allowed to feed on demand, and have infants who received only human milk while in the hospital. However, when evaluating these relationships by maternal race/ethnicity, the authors found that feeding within an hour postpartum was only associated with breastfeeding duration among black and white mothers, but not Hispanic women. Maternity practices are discussed in greater detail in the practice paper.²

Increasing breastfeeding rates by creating successful culturally relevant interventions remains a critical component of initiatives designed to address many of the nations' health disparities. The Surgeon General's Call to Action to Support Breastfeeding presents a set of actions developed from a body of literature that describes

breastfeeding in the context of the socioecological model and calls for efforts targeting immediate family members, community groups, health care workers, employers, and marketers of human milk substitutes, among others.²⁸ Specifically, initiatives that increase the acceptance of breastfeeding as the social norm and present feeding of human milk substitutes as subpar will continue to be needed to move the nation in a positive direction (see practice paper).²

Perceived Insufficient Milk Supply

Prenatal maternal self-efficacy has been linked to positive breastfeeding outcomes.³⁶ Research conducted among primiparas who initiated breastfeeding demonstrates the impact of critical early maternal postpartum factors that can disrupt this association, including concerns about milk volume and the ability for both mothers and infants to breastfeed.³⁶ Although it is believed that only 5% of women are physiologically incapable of producing adequate amounts of milk, approximately 50% of US mothers report perceptions of insufficient milk production, leading to supplementation with human milk substitutes or to weaning completely.²⁷ This supplementation reduces infant suckling at the breast, which leads to an actual reduction in milk production. Education regarding how to accurately assess insufficient milk supply, as well as encouragement to seek expert assistance (such as an International Board Certified Lactation Consultant) when faced with lactation issues, should continue, with efforts amplified in at-

risk populations. The practice paper expands on these and other education-related concepts.²

Gestational Diabetes Mellitus

GDM is a national public health issue that is compounded by the high prevalence of maternal overweight/obesity in the United States.³⁷ In addition, GDM is present at higher rates in populations already at elevated risk for not breastfeeding (eg, non-Hispanic black women and low-income women).²⁴ Epidemiologic evidence indicating a protective effect of breastfeeding on later development of type 2 diabetes among women experiencing GDM has drawn attention to breastfeeding as a critical intervention in these populations.³⁷ Limited research suggests that blood glucose levels of infants born to women with GDM may be more readily stabilized by breastfeeding as compared with feeding human milk substitutes, at least in the immediate postpartum period.³⁸ Therefore, breastfeeding is recommended regardless of the presence of a GDM pregnancy.

COST OF NOT BREASTFEEDING

A recent pediatric cost analysis was conducted to evaluate the economic burden of suboptimal breastfeeding practices.⁵ Both direct and indirect costs for disease and the cost of premature death were included. It was determined that if 90% of families in the United States breastfed exclusively for 6 months, \$13 billion per year could be saved. A similar study focused on maternal outcomes.⁴ In this study, direct and indirect health costs and the economic costs of premature death associated with maternal cases of premenopausal breast cancer, ovarian cancer, hypertension, type 2 diabetes, and myocardial infarction were considered.⁴ Comparing current breastfeeding rates at 1 year (23%) with a goal of 90% indicated that suboptimal breastfeeding rates might result in a cost of \$17.4 billion. RDNs/NDTRs who have completed relevant course work and/or who are certified as an International Board Certified Lactation Consultant are well placed to support families to successfully establish and maintain optimal breastfeeding practices, as outlined in the accompanying practice paper.²

EMERGENT TOPICS

Several issues concerning breastfeeding and the feeding of human milk have emerged that will require additional study. For example, a trending increase in providing human milk exclusively as pumped milk may increase the prevalence of infants receiving human milk for the optimal duration.³⁹ However, little is known about the impact refrigeration/freezing and subsequent thawing might have on the immunologic properties of human milk. In addition, research to tease out the benefits of breastfeeding provided by human milk itself, by the direct contact with the mother, or some combination of the two, has yet to be exhaustively conducted.³⁹ Despite these unknowns, if expressed human milk is offered in lieu of a human milk substitute, it is likely to provide significant benefit and this behavior should continue to be monitored by professionals working with this population.³⁹

Additional emergent topics include optimal levels of maternal vitamin D supplementation to support the breastfeeding infant, the provision of human milk during disaster situations, guidelines for the use of human milk in child care settings, informal milk sharing, and social media and infant feeding (see the practice paper for discussion of these emergent issues).²

CONCLUSION/FUTURE NEEDS

Research continues to support the impact of human milk on infant and maternal health outcomes and, as such, federal initiatives supporting the effort to increase national, regional, and local breastfeeding rates continue to be strengthened. Since publication of the 2009 position paper, an effort has been made to quantify the risks of not breastfeeding and to detail the economic costs associated with suboptimal breastfeeding behaviors. Information presented here and in the accompanying practice paper² provides rationale for continued efforts to shift the norm away from use of human milk substitutes and toward human milk feeds. Research continues to show the importance of breastfeeding and the use of human milk to infant and maternal health outcomes and RDNs/NDTRs should promote and support these practices by maintaining a current basic

level of knowledge about lactation management, as described in the accompanying practice paper.²

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