



EXECUTIVE SUMMARY

Breastfeeding and the Use of Human Milk

INTRODUCTION

Six years have transpired since publication of the last policy statement of the American Academy of Pediatrics (AAP) regarding breastfeeding. Recently published research and systematic reviews have reinforced the conclusion that breastfeeding and human milk are the reference normative standards for infant feeding and nutrition. The current statement (American Academy of Pediatrics, Section on Breastfeeding. Policy statement: breastfeeding and the use of human milk. *Pediatrics*. 2012;129[3]:e827–e841. Available at: www.pediatrics.org/content/129/3/e827.full updates the evidence for this conclusion and serves as a basis for AAP publications that detail breastfeeding management and infant nutrition. The AAP reaffirms its recommendation of exclusive breastfeeding for about 6 months, followed by continued breastfeeding as complementary foods are introduced, with continuation of breastfeeding for 1 year or longer as mutually desired by mother and infant.

EPIDEMIOLOGY

Information regarding breastfeeding rates and practices in the United States is available from a variety of government data sets, including the Centers for Disease Control and Prevention (CDC) National Immunization Survey, the NHANES, and Maternity Practices in Infant Nutrition and Care. Drawing on these data and others, the CDC has published a “Breastfeeding Report Card” that highlights the degree of progress in achieving the breastfeeding goals of the Healthy People 2020 targets.

Although the rate of initiation of breastfeeding for the US population is 75%, it is important to emphasize that this overall rate obscures clinically significant sociodemographic and cultural differences. For example, the breastfeeding initiation rate for the Hispanic or Latino population was 80.6%, but for the non-Hispanic black or African American population, it was 58.1%. Among low-income mothers, the breastfeeding initiation rate was 67.5%, but for those with a higher income, it was 84.6%. Disparities also are age related, as mothers younger than 20 years initiated breastfeeding at a rate of 59.7% compared with the rate of 79.3% in mothers older than 30 years. In non-Hispanic black mothers younger than 20 years, the initiation rate was 30%.

INFANT HEALTH OUTCOMES

The most comprehensive review and analysis of scientific literature comparing short- and long-term health outcomes of breastfeeding and commercial infant formula feeding is “Breastfeeding and Maternal and

SECTION ON BREASTFEEDING

ABBREVIATIONS

AAP—American Academy of Pediatrics
 CDC—Centers for Disease Control and Prevention
 NEC—necrotizing enterocolitis
 WHO—World Health Organization

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Infant Health Outcomes in Developed Countries” from the Evidence-based Practice Centers of the Agency for Healthcare Research and Quality of the US Department of Health and Human Services. The data suggest dose–response relationships between the duration of breastfeeding and many of its protective outcomes.

The risk of hospitalization for lower respiratory tract infections in the first year is reduced 72% if infants are breastfed exclusively for more than 4 months. However, infants who exclusively breastfeed for 4 to 6 months have a fourfold increase in the risk of pneumonia compared with infants who exclusively breastfeed for more than 6 months. Exclusive breastfeeding for more than 3 months reduces the incidence of otitis media by 50%. Serious colds and ear and throat infections are reduced by 63% in infants who exclusively breastfeed for 6 months.

Any breastfeeding is associated with a 64% reduction in the incidence of nonspecific gastrointestinal tract infections, and this effect lasts for 2 months after cessation of breastfeeding.

A reduction in leukemia is correlated with the duration of breastfeeding—acute lymphocytic leukemia is reduced by 20%, and acute myeloid leukemia is reduced by 15% in infants breastfed for 6 months or longer.

Long-term health outcomes are affected by duration and/or presence of breastfeeding in infancy. The incidence of type 1 diabetes is reduced 30% in infants exclusively breastfed for at least 3 months. A reduction of 40% in type 2 diabetes also is reported, possibly reflecting the long-term positive effect of breastfeeding on weight control and feeding self-regulation. Celiac disease is reduced 52% in infants who were breastfed at the time of gluten exposure. The critical protective factor seems to be the overlap of breastfeeding at the time of the initial introduction of

gluten. Thus, gluten-containing foods should be introduced while the infant is breastfed exclusively.

Different patterns of intestinal colonization in breastfed versus commercial infant formula–fed infants may add to the long-term preventative effect of human milk. For example, breastfeeding is associated with a 31% reduction in the risk of childhood inflammatory bowel disease. Exclusive breastfeeding for 3 to 4 months also is associated with a reduction in asthma, atopic dermatitis, and eczema by 27% in a low-risk population and 42% in infants with positive family history. Studies that examine the timing of adding complementary foods after 4 months have had conflicting results regarding the risk of allergy, including food allergies, atopic dermatitis, and asthma, in either the allergy-prone or nonatopic individual. Similarly, no convincing data exist that delaying introduction of potentially allergenic foods after 6 months has any protective effect.

Because rates of obesity are significantly lower in breastfed infants, national campaigns to prevent obesity should begin with breastfeeding support. Although complex factors confound studies of obesity, breastfeeding is associated with a 30% reduction in adolescent and adult obesity.

Breastfeeding is associated with a reduction in sudden infant death syndrome (SIDS). The rate of this syndrome is reduced 45% with any breastfeeding and 73% with exclusive breastfeeding. Because breastfeeding reduces overall infant mortality for all the reasons discussed, the global health implications are enormous. In the 42 developing countries wherein 90% of the world’s childhood deaths occur, exclusive breastfeeding for 6 months and weaning after 1 year is the most effective intervention, with the potential of preventing more than 1 million infant deaths per year, equal to preventing 13% of the world’s childhood mortality.

INFANT NEURODEVELOPMENTAL OUTCOMES

Consistent differences in neurodevelopmental outcome between breastfed and commercial infant formula–fed infants have been reported, but the outcomes are confounded by differences in parental education, intelligence, home environment, and socioeconomic status. Adjusted outcomes for intelligence scores and teacher’s ratings are significantly greater in breastfed infants. Higher intelligence scores and higher teacher ratings are noted in infants breastfed exclusively for 3 months or longer. Significantly positive effects of human milk feeding on long-term neurodevelopment are observed in preterm infants, the population more at risk for adverse neurodevelopmental outcomes. Studies to adolescence suggest that intelligence test results and brain volumes are greater in those who received human milk as preterm infants in the hospital, and these outcomes are related to the dose of human milk received in the hospital.

PRETERM INFANT OUTCOMES

Feeding preterm infants human milk has several significant short- and long-term beneficial effects. Lower rates of sepsis and necrotizing enterocolitis (NEC) indicate that human milk contributes to the development of the preterm infant’s immature host defense. The incidence of NEC is significantly reduced (anywhere from 58% to 83%) with the feeding of human milk, even when fortified with cow milk–based human milk fortifiers. However, preterm infants fed an exclusive human milk diet compared with those fed human milk supplemented with cow milk–based infant formula products had a 77% reduction in NEC and NEC surgery. Clinical feeding tolerance in preterm infants also is improved, and the attainment of full enteral feeding is hastened by a diet of human milk.

The benefits of feeding human milk to preterm infants are realized not only in the NICU but also in the fewer hospital readmissions for illness in the 3 years after hospital discharge.

The potent benefits of human milk are such that all preterm infants should receive human milk. Milk from the infant's own mother, fresh or previously frozen, should be the primary diet, and it should be fortified appropriately for the infant born weighing less than 1.5 kg. If the mother's milk is unavailable despite significant lactation support, pasteurized donor milk should be used.

MATERNAL OUTCOMES

Both short- and long-term health benefits accrue to mothers who breastfeed. Such mothers have decreased postpartum blood loss and more rapid involution of the uterus. Continued breastfeeding leads to increased child spacing secondary to lactational amenorrhea. Prospective cohort studies have noted an increase in postpartum depression in mothers who do not breastfeed or who wean early.

Large population studies suggest that exclusive breastfeeding is associated with a more rapid return to prepregnancy weight. Similar studies suggest an inverse relationship between the cumulative lifetime duration of lactation and the development of rheumatoid arthritis, hypertension, hyperlipidemia, cardiovascular disease, and diabetes. Cumulative lactation experience also correlates a reduction in both breast (primarily premenopausal) and ovarian cancer.

DURATION OF EXCLUSIVE BREASTFEEDING

The AAP recommends exclusive breastfeeding for about 6 months, with continuation of breastfeeding for 1 year or longer as mutually desired by mother and infant, a recommendation concurred to by the World Health Organization

(WHO) and the Institute of Medicine. Support for this recommendation of exclusive breastfeeding is found in the differences in health outcomes of infants breastfed exclusively for 4 vs 6 months for gastrointestinal disease, otitis media, respiratory illnesses, and atopic disease as well as differences in maternal outcomes of delayed menses and postpartum weight loss.

The AAP is cognizant that for some infants, because of family and medical history, individual developmental status, and/or social and cultural dynamics, complementary feeding, including gluten-containing grains, begins earlier than 6 months of age. Because breastfeeding is immunoprotective, it is advised that such complementary foods be introduced while the infant is receiving only human milk. Mothers should be encouraged to continue breastfeeding through the first year and beyond as more and varied complementary foods are introduced.

CONTRAINDICATIONS TO BREASTFEEDING

A limited number of medical conditions preclude breastfeeding. The only infant condition, galactosemia, requires use of a nonlactose-containing milk. Conditions in the mother that limit breastfeeding are: active untreated tuberculosis, H1N1 influenza, varicella, and active herpetic lesions on the breast. However, expressed milk can be used. Mothers who are positive for human T-cell lymphotropic virus type I or II or untreated brucellosis should not breastfeed nor provide expressed milk to their infants. In the industrialized world, it is not recommended that HIV-positive mothers breastfeed. In the developing world, where mortality is increased in non-breastfeeding infants, the overall health benefits of breastfeeding combined with antiretroviral therapy outweigh the risk of the acquiring HIV infection from human milk.

Maternal substance abuse requires an evaluation before breastfeeding. Adequately nourished narcotic-dependent mothers can be encouraged to breastfeed if they are enrolled in a supervised methadone maintenance program and have negative screening for HIV infection and illicit drugs. Mothers using street drugs should not breastfeed. Alcoholic beverage use should be minimized because of effect on infant development. Maternal smoking should be discouraged because it is associated with an increase in respiratory allergy and sudden infant death syndrome. The most comprehensive information regarding the safety of specific maternal medications when the mother is breastfeeding is LactMed, published by the National Library of Medicine/National Institutes of Health.

HOSPITAL ROUTINES

Hospital routines markedly influence breastfeeding success. The Sections on Breastfeeding and Perinatal Pediatrics have published the Sample Hospital Breastfeeding Policy, which is based on the Ten Steps program of the Baby-Friendly Hospital Initiative endorsed by the AAP in 2009. Implementation of specific postpartum hospital practices increases breastfeeding success: early skin-to-skin contact and breastfeeding; exclusive breastfeeding with no water, glucose water, or commercial infant formula supplementation unless medically indicated; rooming-in with unrestricted breastfeeding; avoidance of pacifiers; and a plan for follow-up after discharge from the hospital. Emphasis is placed on the need to revise or discontinue disruptive hospital policies that interfere with these practices.

The CDC National Survey of Maternity Practices in Infant Nutrition and Care assessed lactation practices in most US birth centers and noted that the mean score for implementation of the Ten Steps program was only 65%,

reinforcing a need for a major conceptual change in the organization of the hospital services for the mother and infant dyad. Significant numbers of hospitals regularly offered commercial infant formula supplementation to breastfeeding mothers, erroneously advised mothers to limit suckling at the breast to a specified length of time, routinely provided pacifiers, distributed discharge bags containing commercial infant formula, did not have model breastfeeding policies, and did not provide support for breastfeeding mothers after discharge. Only one-third of centers practiced more than 5 of the 10 steps, and only 3.5% practiced 9 to 10 steps. The importance of addressing the issue of the impact of hospital practices and policies on breastfeeding outcomes is highlighted by the decision of The Joint Commission to adopt the rate of exclusive human milk feeding as a Perinatal Care Core Measure.

Hospitals also need to include in their policies the appropriate timing of the administration of vitamins K and D. Intramuscular vitamin K should be administered to all infants on the first day to reduce the risk of hemorrhagic disease of the newborn, but its administration should be delayed until after the first breastfeeding but not later than 6 hours of age. Vitamin D deficiency/insufficiency and rickets have increased in all infants as a result of decreased sunlight exposure secondary to changes in lifestyle, dress habits, and use of topical sunscreens. Thus, all breastfed infants should receive an oral supplement of vitamin D, 400 U per day, beginning at hospital discharge.

ROLE OF THE PEDIATRICIAN

Pediatricians have a critical role in their individual practices, communities, and society at large to serve as advocates and supporters of successful breastfeeding. Despite this critical role, studies have demonstrated lack of preparation

and knowledge and declining attitudes regarding the feasibility of breastfeeding. The AAP Breastfeeding Initiatives Web site (www.aap.org/breastfeeding) provides breastfeeding-related materials and resources, including the "Safe and Healthy Beginnings" toolkit, a resource for offices regarding promotion of breastfeeding in a busy pediatric practice setting, a pocket guide for coding to facilitate appropriate reimbursement, suggested guidelines for telephone triage of maternal breastfeeding concerns, and information regarding employer support for breastfeeding in the workplace. The critical role that pediatricians play is highlighted by the recommended health supervision visit at 3 to 5 days of age, which is within 48 to 72 hours after discharge from the hospital.

Growth monitoring in the pediatric office should include the use of the WHO growth curves as the normative model for growth and development irrespective of infant ethnicity or geography, reflecting the optimal growth of the breastfed infant for the first 2 years. As of September 2010, the CDC, with the concurrence of the AAP, recommended the use of the WHO curves for all children younger than 24 months.

Pediatricians also should serve as breastfeeding advocates and educators and not solely delegate this role to staff. To assist in the education of future physicians, the AAP recommends using the evidence-based Breastfeeding Residency Curriculum, which has been demonstrated to improve knowledge, confidence, practice patterns, and breastfeeding rates.

The pediatrician's own office-based practice should serve as a model for how to support breastfeeding in the workplace. A mother/infant-friendly work site provides benefits to employers, including a reduction in company health care costs, lower employee

absenteeism, reduction in employee turnover, and increased employee morale and productivity. The Maternal and Child Health Bureau of the US Department of Health and Human Services, with support from the Office on Women's Health, has created "The Business Case for Breastfeeding," which provides details of economic benefits to the employer and toolkits for the creation of such programs. The Patient Protection and Affordable Care Act passed by Congress in March 2010 mandates that employers provide "reasonable break time" for nursing mothers and private clean areas for milk expression during their work day.

CONCLUSIONS

Research and national strategies, including the recent Surgeon General's Call to Action, have reinforced the conclusion that breastfeeding and the use of human milk confer unique nutritional and nonnutritional benefits to the infant and the mother and, in turn, optimize infant, child, and adult health as well as child growth and development. Infant feeding should not be considered as a lifestyle choice but rather as a basic health issue.

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