

# AMERICAN ACADEMY OF PEDIATRICS

Work Group on Breastfeeding

## Breastfeeding and the Use of Human Milk

**ABSTRACT.** This policy statement on breastfeeding replaces the previous policy statement of the American Academy of Pediatrics, reflecting the considerable advances that have occurred in recent years in the scientific knowledge of the benefits of breastfeeding, in the mechanisms underlying these benefits, and in the practice of breastfeeding. This document summarizes the benefits of breastfeeding to the infant, the mother, and the nation, and sets forth principles to guide the pediatrician and other health care providers in the initiation and maintenance of breastfeeding. The policy statement also delineates the various ways in which pediatricians can promote, protect, and support breastfeeding, not only in their individual practices but also in the hospital, medical school, community, and nation.

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ABBREVIATION. AAP, American Academy of Pediatrics.

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### HISTORY AND INTRODUCTION

From its inception, the American Academy of Pediatrics (AAP) has been a staunch advocate of breastfeeding as the optimal form of nutrition for infants. One of the earliest AAP publications was a 1948 manual, *Standards and Recommendations for the Hospital Care of Newborn Infants*. This manual included a recommendation to make every effort to have every mother nurse her full-term infant. A major concern of the AAP has been the development of guidelines for proper nutrition for infants and children. The activities, statements, and recommendations of the AAP have continuously promoted breastfeeding of infants as the foundation of good feeding practices.

### THE NEED

Extensive research, especially in recent years, documents diverse and compelling advantages to infants, mothers, families, and society from breastfeeding and the use of human milk for infant feeding. These include health, nutritional, immunologic, developmental, psychological, social, economic, and environmental benefits.

Human milk is uniquely superior for infant feeding and is species-specific; all substitute feeding options differ markedly from it. The breastfed infant is the reference or normative model against which all alternative feeding methods must be measured with regard to growth, health, development, and all other short- and long-term outcomes.

The recommendations in this statement do not indicate an exclusive course of treatment or serve as a standard of medical care. Variations, taking into account individual circumstances, may be appropriate.

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Epidemiologic research shows that human milk and breastfeeding of infants provide advantages with regard to general health, growth, and development, while significantly decreasing risk for a large number of acute and chronic diseases. Research in the United States, Canada, Europe, and other *developed* countries, among predominantly middle-class populations, provides strong evidence that human milk feeding decreases the incidence and/or severity of diarrhea,<sup>1-5</sup> lower respiratory infection,<sup>6-9</sup> otitis media,<sup>3,10-14</sup> bacteremia,<sup>15,16</sup> bacterial meningitis,<sup>15,17</sup> botulism,<sup>18</sup> urinary tract infection,<sup>19</sup> and necrotizing enterocolitis.<sup>20,21</sup> There are a number of studies that show a possible protective effect of human milk feeding against sudden infant death syndrome,<sup>22-24</sup> insulin-dependent diabetes mellitus,<sup>25-27</sup> Crohn's disease,<sup>28,29</sup> ulcerative colitis,<sup>29</sup> lymphoma,<sup>30,31</sup> allergic diseases,<sup>32-34</sup> and other chronic digestive diseases.<sup>35-37</sup> Breastfeeding has also been related to possible enhancement of cognitive development.<sup>38,39</sup>

There are also a number of studies that indicate possible health benefits for mothers. It has long been acknowledged that breastfeeding increases levels of oxytocin, resulting in less postpartum bleeding and more rapid uterine involution.<sup>40</sup> Lactational amenorrhea causes less menstrual blood loss over the months after delivery. Recent research demonstrates that lactating women have an earlier return to prepregnant weight,<sup>41</sup> delayed resumption of ovulation with increased child spacing,<sup>42-44</sup> improved bone remineralization postpartum<sup>45</sup> with reduction in hip fractures in the postmenopausal period,<sup>46</sup> and reduced risk of ovarian cancer<sup>47</sup> and premenopausal breast cancer.<sup>48</sup>

In addition to individual health benefits, breastfeeding provides significant social and economic benefits to the nation, including reduced health care costs and reduced employee absenteeism for care attributable to child illness. The significantly lower incidence of illness in the breastfed infant allows the parents more time for attention to siblings and other family duties and reduces parental absence from work and lost income. The direct economic benefits to the family are also significant. It has been estimated that the 1993 cost of purchasing infant formula for the first year after birth was \$855. During the first 6 weeks of lactation, maternal caloric intake is no greater for the breastfeeding mother than for the nonlactating mother.<sup>49,50</sup> After that period, food and fluid intakes are greater, but the cost of this increased caloric intake is about half the cost of purchasing formula. Thus, a saving of >\$400 per child

for food purchases can be expected during the first year.<sup>51,52</sup>

Despite the demonstrated benefits of breastfeeding, there are some situations in which breastfeeding is not in the best interest of the infant. These include the infant with galactosemia,<sup>53,54</sup> the infant whose mother uses illegal drugs,<sup>55</sup> the infant whose mother has untreated active tuberculosis, and the infant in the United States whose mother has been infected with the human immunodeficiency virus.<sup>56,57</sup> In countries with populations at increased risk for other infectious diseases and nutritional deficiencies resulting in infant death, the mortality risks associated with not breastfeeding may outweigh the possible risks of acquiring human immunodeficiency virus infection.<sup>58</sup> Although most prescribed and over-the-counter medications are safe for the breastfed infant, there are a few medications that mothers may need to take that may make it necessary to interrupt breastfeeding temporarily. These include radioactive isotopes, antimetabolites, cancer chemotherapy agents, and a small number of other medications. Excellent books and tables of drugs that are safe or contraindicated in breastfeeding are available to the physician for reference, including a publication from the AAP.<sup>55</sup>

### THE PROBLEM

Increasing the rates of breastfeeding initiation and duration is a national health objective and one of the goals of Healthy People 2000. The target is to "increase to at least 75% the proportion of mothers who breastfeed their babies in the early postpartum period and to at least 50% the proportion who continue breastfeeding until their babies are 5 to 6 months old."<sup>59</sup> Although breastfeeding rates have increased slightly since 1990, the percentage of women currently electing to breastfeed their babies is still lower than levels reported in the mid-1980s and is far below the Healthy People 2000 goal. In 1995, 59.4% of women in the United States were breastfeeding either exclusively or in combination with formula feeding at the time of hospital discharge; only 21.6% of mothers were nursing at 6 months, and many of these were supplementing with formula.<sup>60</sup>

The highest rates of breastfeeding are observed among higher-income, college-educated women >30 years of age living in the Mountain and Pacific regions of the United States.<sup>60</sup> Obstacles to the initiation and continuation of breastfeeding include physician apathy and misinformation,<sup>61-63</sup> insufficient prenatal breastfeeding education,<sup>64</sup> disruptive hospital policies,<sup>65</sup> inappropriate interruption of breastfeeding,<sup>62</sup> early hospital discharge in some populations,<sup>66</sup> lack of timely routine follow-up care and postpartum home health visits,<sup>67</sup> maternal employment<sup>68,69</sup> (especially in the absence of workplace facilities and support for breastfeeding),<sup>70</sup> lack of broad societal support,<sup>71</sup> media portrayal of bottle-feeding as normative,<sup>72</sup> and commercial promotion of infant formula through distribution of hospital discharge packs, coupons for free or discounted formula, and television and general magazine advertising.<sup>73,74</sup>

The AAP identifies breastfeeding as the ideal

method of feeding and nurturing infants and recognizes breastfeeding as primary in achieving optimal infant and child health, growth, and development. The AAP emphasizes the essential role of the pediatrician in promoting, protecting, and supporting breastfeeding and recommends the following breastfeeding policies.

### RECOMMENDED BREASTFEEDING PRACTICES

1. Human milk is the preferred feeding for all infants, including premature and sick newborns, with rare exceptions.<sup>75-77</sup> The ultimate decision on feeding of the infant is the mother's. Pediatricians should provide parents with complete, current information on the benefits and methods of breastfeeding to ensure that the feeding decision is a fully informed one. When direct breastfeeding is not possible, expressed human milk, fortified when necessary for the premature infant, should be provided.<sup>78,79</sup> Before advising against breastfeeding or recommending premature weaning, the practitioner should weigh thoughtfully the benefits of breastfeeding against the risks of not receiving human milk.
2. Breastfeeding should begin as soon as possible after birth, usually within the first hour.<sup>80-82</sup> Except under special circumstances, the newborn infant should remain with the mother throughout the recovery period.<sup>80,83,84</sup> Procedures that may interfere with breastfeeding or traumatize the infant should be avoided or minimized.
3. Newborns should be nursed whenever they show signs of hunger, such as increased alertness or activity, mouthing, or rooting.<sup>85</sup> Crying is a *late* indicator of hunger.<sup>86</sup> Newborns should be nursed approximately 8 to 12 times every 24 hours until satiety, usually 10 to 15 minutes on each breast.<sup>87,88</sup> In the early weeks after birth, nondemanding babies should be aroused to feed if 4 hours have elapsed since the last nursing.<sup>89,90</sup> Appropriate initiation of breastfeeding is facilitated by continuous rooming-in.<sup>91</sup> Formal evaluation of breastfeeding performance should be undertaken by trained observers and fully documented in the record during the first 24 to 48 hours after delivery and again at the early follow-up visit, which should occur 48 to 72 hours after discharge. Maternal recording of the time of each breastfeeding and its duration, as well as voidings and stoolings during the early days of breastfeeding in the hospital and at home, greatly facilitates the evaluation process.
4. No supplements (water, glucose water, formula, and so forth) should be given to breastfeeding newborns unless a medical indication exists.<sup>92-95</sup> With sound breastfeeding knowledge and practices, supplements rarely are needed. Supplements and pacifiers should be avoided whenever possible and, if used at all, only after breastfeeding is well established.<sup>93-98</sup>
5. When discharged <48 hours after delivery, all breastfeeding mothers and their newborns should be seen by a pediatrician or other knowledgeable health care practitioner when the newborn is 2 to 4 days of age. In addition to determination of

infant weight and general health assessment, breastfeeding should be observed and evaluated for evidence of successful breastfeeding behavior. The infant should be assessed for jaundice, adequate hydration, and age-appropriate elimination patterns (at least six urinations per day and three to four stools per day) by 5 to 7 days of age. All newborns should be seen by 1 month of age.<sup>99</sup>

6. Exclusive breastfeeding is ideal nutrition and sufficient to support optimal growth and development for approximately the first 6 months after birth.<sup>100</sup> Infants weaned before 12 months of age should not receive cow's milk feedings but should receive iron-fortified infant formula.<sup>101</sup> Gradual introduction of iron-enriched solid foods in the second half of the first year should complement the breast milk diet.<sup>102,103</sup> It is recommended that breastfeeding continue for at least 12 months, and thereafter for as long as mutually desired.<sup>104</sup>
7. In the first 6 months, water, juice, and other foods are generally unnecessary for breastfed infants.<sup>105,106</sup> Vitamin D and iron may need to be given before 6 months of age in selected groups of infants (vitamin D for infants whose mothers are vitamin D-deficient or those infants not exposed to adequate sunlight; iron for those who have low iron stores or anemia).<sup>107-109</sup> Fluoride should not be administered to infants during the first 6 months after birth, whether they are breast- or formula-fed. During the period from 6 months to 3 years of age, breastfed infants (and formula-fed infants) require fluoride supplementation only if the water supply is severely deficient in fluoride (<0.3 ppm).<sup>110</sup>
8. Should hospitalization of the breastfeeding mother or infant be necessary, every effort should be made to maintain breastfeeding, preferably directly, or by pumping the breasts and feeding expressed breast milk, if necessary.

#### ROLE OF PEDIATRICIANS IN PROMOTING AND PROTECTING BREASTFEEDING

To provide an optimal environment for breastfeeding, pediatricians should follow these recommendations:

1. Promote and support breastfeeding enthusiastically. In consideration of the extensive published evidence for improved outcomes in breastfed infants and their mothers, a strong position on behalf of breastfeeding is justified.
2. Become knowledgeable and skilled in both the physiology and the clinical management of breastfeeding.
3. Work collaboratively with the obstetric community to ensure that women receive adequate information throughout the perinatal period to make a fully informed decision about infant feeding. Pediatricians should also use opportunities to provide age-appropriate breastfeeding education to children and adults.
4. Promote hospital policies and procedures that facilitate breastfeeding. Electric breast pumps

and private lactation areas should be available to all breastfeeding mothers in the hospital, both on ambulatory and inpatient services. Pediatricians are encouraged to work actively toward eliminating hospital practices that discourage breastfeeding (eg, infant formula discharge packs and separation of mother and infant).

5. Become familiar with local breastfeeding resources (eg, Special Supplemental Nutrition Program for Women, Infants, and Children clinics, lactation educators and consultants, lay support groups, and breast pump rental stations) so that patients can be referred appropriately.<sup>111</sup> When specialized breastfeeding services are used, pediatricians need to clarify for patients their essential role as the infant's primary medical care taker. Effective communication among the various counselors who advise breastfeeding women is essential.
6. Encourage routine insurance coverage for necessary breastfeeding services and supplies, including breast pump rental and the time required by pediatricians and other licensed health care professionals to assess and manage breastfeeding.
7. Promote breastfeeding as a normal part of daily life, and encourage family and societal support for breastfeeding.
8. Develop and maintain effective communications and collaboration with other health care providers to ensure optimal breastfeeding education, support, and counsel for mother and infant.
9. Advise mothers to return to their physician for a thorough breast examination when breastfeeding is terminated.
10. Promote breastfeeding education as a routine component of medical school and residency education.
11. Encourage the media to portray breastfeeding as positive and the norm.
12. Encourage employers to provide appropriate facilities and adequate time in the workplace for breast-pumping.

#### CONCLUSION

Although economic, cultural, and political pressures often confound decisions about infant feeding, the AAP firmly adheres to the position that breastfeeding ensures the best possible health as well as the best developmental and psychosocial outcomes for the infant. Enthusiastic support and involvement of pediatricians in the promotion and practice of breastfeeding is essential to the achievement of optimal infant and child health, growth, and development.

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## REFERENCES

- Dewey KG, Heinig MJ, Nommsen-Rivers LA. Differences in morbidity between breast-fed and formula-fed infants. *J Pediatr*. 1995;126:696-702
- Howie PW, Forsyth JS, Ogston SA, et al. Protective effect of breast feeding against infection. *Br Med J*. 1990;300:11-16
- Kovar MG, Serdula MK, Marks JS, et al. Review of the epidemiologic evidence for an association between infant feeding and infant health. *Pediatrics*. 1984;74:S615-S638
- Popkin BM, Adair L, Akin JS, et al. Breast-feeding and diarrheal morbidity. *Pediatrics*. 1990;86:874-882
- Beaudry M, Dufour R, Marcoux S. Relation between infant feeding and infections during the first six months of life. *J Pediatr*. 1995;126:191-197
- Frank AL, Taber LH, Glezen WP, et al. Breast-feeding and respiratory virus infection. *Pediatrics*. 1982;70:239-245
- Wright AL, Holberg CJ, Martinez FD, et al. Breast feeding and lower respiratory tract illness in the first year of life. *Br Med J*. 1989;299:945-949
- Chen Y. Synergistic effect of passive smoking and artificial feeding on hospitalization for respiratory illness in early childhood. *Chest*. 1989;95:1004-1007
- Wright AL, Holberg CJ, Taussig LM, et al. Relationship of infant feeding to recurrent wheezing at age 6 years. *Arch Pediatr Adolesc Med*. 1995;149:758-763
- Saarinén UM. Prolonged breast feeding as prophylaxis for recurrent otitis media. *Acta Paediatr Scand*. 1982;71:567-571
- Duncan B, Ey J, Holberg CJ, et al. Exclusive breast-feeding for at least 4 months protects against otitis media. *Pediatrics*. 1993;91:867-872
- Owen MJ, Baldwin CD, Swank PR, et al. Relation of infant feeding practices, cigarette smoke exposure, and group child care to the onset and duration of otitis media with effusion in the first two years of life. *J Pediatr*. 1993;123:702-711
- Paradise JL, Elster BA, Tan L. Evidence in infants with cleft palate that breast milk protects against otitis media. *Pediatrics*. 1994;94:853-860
- Aniansson G, Alm B, Andersson B, et al. A prospective cohort study on breast-feeding and otitis media in Swedish infants. *Pediatr Infect Dis J*. 1994;13:183-188
- Cochi SL, Fleming DW, Hightower AW, et al. Primary invasive *Haemophilus influenzae* type b disease: a population-based assessment of risk factors. *J Pediatr*. 1986;108:887-896
- Takala AK, Eskola J, Palmgren J, et al. Risk factors of invasive *Haemophilus influenzae* type b disease among children in Finland. *J Pediatr*. 1989;115:694-701
- Istre GR, Conner JS, Broome CV, et al. Risk factors for primary invasive *Haemophilus influenzae* disease: increased risk from day care attendance and school-aged household members. *J Pediatr*. 1985;106:190-195
- Arnon SS. Breast feeding and toxigenic intestinal infections: missing links in crib death? *Rev Infect Dis*. 1984;6:S193-S201
- Pisacane A, Graziano L, Mazzarella G, et al. Breast-feeding and urinary tract infection. *J Pediatr*. 1992;120:87-89
- Lucas A, Cole TJ. Breast milk and neonatal necrotising enterocolitis. *Lancet*. 1990;336:1519-1523
- Covert RF, Barman N, Domanico RS, et al. Prior enteral nutrition with human milk protects against intestinal perforation in infants who develop necrotizing enterocolitis. *Pediatr Res*. 1995;37:305A. Abstract
- Ford RPK, Taylor BJ, Mitchell EA, et al. Breastfeeding and the risk of sudden infant death syndrome. *Int J Epidemiol*. 1993;22:885-890
- Mitchell EA, Taylor BJ, Ford RPK, et al. Four modifiable and other major risk factors for cot death: the New Zealand study. *J Paediatr Child Health*. 1992;28:S3-S8
- Scragg LK, Mitchell EA, Tonkin SL, et al. Evaluation of the cot death prevention programme in South Auckland. *N Z Med J*. 1993;106:8-10
- Mayer EJ, Hamman RF, Gay EC, et al. Reduced risk of IDDM among breast-fed children. *Diabetes*. 1988;37:1625-1632
- Virtanen SM, Rasanen L, Aro A, et al. Infant feeding in Finnish children <7 yr of age with newly diagnosed IDDM. *Diabetes Care*. 1991;14:415-417
- Gerstein HC. Cow's milk exposure and type 1 diabetes mellitus. *Diabetes Care*. 1994;17:13-19
- Koletzko S, Sherman P, Corey M, et al. Role of infant feeding practices in development of Crohn's disease in childhood. *Br Med J*. 1989;298:1617-1618
- Rigas A, Rigas B, Glassman M, et al. Breast-feeding and maternal smoking in the etiology of Crohn's disease and ulcerative colitis in childhood. *Ann Epidemiol*. 1993;3:387-392
- Davis MK, Savitz DA, Graubard BI. Infant feeding and childhood cancer. *Lancet*. 1988;2:365-368
- Shu X-O, Clemens J, Zheng W, et al. Infant breastfeeding and the risk of childhood lymphoma and leukaemia. *Int J Epidemiol*. 1995;24:27-32
- Lucas A, Brooke OG, Morley R, et al. Early diet of preterm infants and development of allergic or atopic disease: randomised prospective study. *Br Med J*. 1990;300:837-840
- Halken S, Host A, Hansen LG, et al. Effect of an allergy prevention programme on incidence of atopic symptoms in infancy. *Ann Allergy*. 1992;47:545-553
- Saarinén UM, Kajosaari M. Breastfeeding as prophylaxis against atopic disease: prospective follow-up study until 17 years old. *Lancet*. 1995;346:1065-1069
- Udall JN, Dixon M, Newman AP, et al. Liver disease in  $\alpha_1$ -antitrypsin deficiency: retrospective analysis of the influence of early breast- vs bottle-feeding. *JAMA*. 1985;253:2679-2682
- Sveger T. Breast-feeding,  $\alpha_1$ -antitrypsin deficiency, and liver disease? *JAMA*. 1985;254:3036. Letter
- Greco L, Auricchio S, Mayer M, et al. Case control study on nutritional risk factors in celiac disease. *J Pediatr Gastroenterol Nutr*. 1988;7:395-399
- Morrow-Tlucak M, Haude RH, Erhart CB. Breastfeeding and cognitive development in the first 2 years of life. *Soc Sci Med*. 1988;26:635-639
- Wang YS, Wu SY. The effect of exclusive breastfeeding on development and incidence of infection in infants. *J Hum Lactation*. 1996;12:27-30
- Chua S, Arulkumaran S, Lim I, et al. Influence of breastfeeding and nipple stimulation on postpartum uterine activity. *Br J Obstet Gynaecol*. 1994;101:804-805
- Dewey KG, Heinig MJ, Nommsen LA. Maternal weight-loss patterns during prolonged lactation. *Am J Clin Nutr*. 1993;58:162-166
- Kennedy KI, Visness CM. Contraceptive efficacy of lactational amenorrhoea. *Lancet*. 1992;339:227-230
- Gray RH, Campbell OM, Apelo R, et al. Risk of ovulation during lactation. *Lancet*. 1990;335:25-29
- Labbock MH, Colie C. Puerperium and breast-feeding. *Curr Opin Obstet Gynecol*. 1992;4:818-825
- Melton LJ, Bryant SC, Wahner HW, et al. Influence of breastfeeding and other reproductive factors on bone mass later in life. *Osteoporos Int*. 1993;3:76-83
- Cumming RG, Klineberg RJ. Breastfeeding and other reproductive factors and the risk of hip fractures in elderly woman. *Int J Epidemiol*. 1993;22:684-691
- Rosenblatt KA, Thomas DB, WHO Collaborative Study of Neoplasia and Steroid Contraceptives. *Int J Epidemiol*. 1993;22:192-197
- Newcomb PA, Storer BE, Longnecker MP, et al. Lactation and a reduced risk of premenopausal breast cancer. *N Engl J Med*. 1994;330:81-87
- Heck H, de Castro JM. The caloric demand of lactation does not alter spontaneous meal patterns, nutrient intakes, or moods of women. *Physiol Behav*. 1993;54:641-648
- Butte NF, Garza C, O'Brien Smith JE, et al. Effect of maternal diet and body composition on lactational performance. *Am J Clin Nutr*. 1984;39:296-306
- Montgomery D, Splett P. Economic benefit of breast-feeding infants enrolled in WIC. *J Am Diet Assoc*. 1997;97:379-385
- Tuttle CR, Dewey KG. Potential cost savings for Medi-Cal, AFDC, food stamps, and WIC programs associated with increasing breast-feeding among low-income Hispanic women in California. *J Am Diet Assoc*. 1996;96:885-890
- Wilson MH. Feeding the healthy child. In: Oski FA, DeAngelis CD, Feigin RD, et al., eds. *Principles and Practice of Pediatrics*. Philadelphia, PA: JB Lippincott; 1990:533-545
- Rohr FJ, Levy HL, Shih VE. Inborn errors of metabolism. In: Walker WA, Watkins JB, eds. *Nutrition in Pediatrics*. Boston, MA: Little, Brown; 1985:412
- American Academy of Pediatrics, Committee on Drugs. The transfer of drugs and other chemicals into human milk. *Pediatrics*. 1994;93:137-150
- American Academy of Pediatrics, Committee on Pediatric Aids. Human milk, breastfeeding, and transmission of human immunodeficiency virus. *Pediatrics*. 1994;93:137-150

- ciency virus in the United States. *Pediatrics*. 1995;96:977-979
57. Centers for Disease Control and Prevention. Recommendations for assisting in the prevention of perinatal transmission of human T-lymphotropic virus type III/lymphadenopathy-associated virus and acquired immunodeficiency syndrome. *MMWR*. 1985;34:721-732
  58. World Health Organization. Consensus statement from the consultation on HIV transmission and breastfeeding. *J Hum Lactation*. 1992;8:173-174
  59. *Healthy People 2000: National Health Promotion and Disease Prevention Objectives*. Washington, DC: Government Printing Office; 1990: 379-380. US Dept of Health and Human Services publication PHS 91-50212
  60. Ryan AS. The resurgence of breastfeeding in the United States. *Pediatrics*. 1997;99(4). URL: <http://www.pediatrics.org/cgi/content/full/99/4/e12>
  61. Freed GL, McIntosh Jones T, Fraley JK. Attitudes and education of pediatric house staff concerning breast-feeding. *South Med J*. 1992;85:484-485
  62. Freed GL, Clark SJ, Sorenson J, et al. National assessment of physicians' breast-feeding knowledge, attitudes, training, and experience. *JAMA*. 1995;273:472-476
  63. Williams EL, Hammer LD. Breastfeeding attitudes and knowledge of pediatricians-in-training. *Am J Prev Med*. 1995;11:26-33
  64. World Health Organization. *Protecting, Promoting and Supporting Breast-Feeding: The Special Role of Maternity Services*. Geneva, Switzerland: WHO; 1989:13-18
  65. Powers NG, Naylor AJ, Wester RA. Hospital policies: crucial to breast-feeding success. *Semin Perinatol*. 1994;18:517-524
  66. Braveman P, Egarter S, Pearl M, et al. Problems associated with early discharge of newborn infants. *Pediatrics*. 1995;96:716-726
  67. Williams LR, Cooper MK. Nurse-managed postpartum home care. *J Obstet Gynecol Neonatal Nurs*. 1993;22:25-31
  68. Gielen AC, Faden RR, O'Campo P, et al. Maternal employment during the early postpartum period: effects on initiation and continuation of breast-feeding. *Pediatrics*. 1991;87:298-305
  69. Ryan AS, Martinez GA. Breast-feeding and the working mother: a profile. *Pediatrics*. 1989;83:524-531
  70. Frederick IB, Auerback KG. Maternal-infant separation and breast-feeding: the return to work or school. *J Reprod Med*. 1985;30:523-526
  71. Spisak S, Gross SS. Second Followup Report: *The Surgeon General's Workshop on Breastfeeding and Human Lactation*. Washington, DC: National Center for Education in Maternal and Child Health; 1991
  72. World Health Assembly. *International Code of Marketing of Breast-milk Substitutes. Resolution of the 34th World Health Assembly*. No. 34.22, Geneva, Switzerland: WHO; 1981
  73. Howard CR, Howard FM, Weitzman ML. Infant formula distribution and advertising in pregnancy: a hospital survey. *Birth*. 1994;21:14-19
  74. Howard FM, Howard CR, Weitzman ML. The physician as advertiser: the unintentional discouragement of breast-feeding. *Obstet Gynecol*. 1993;81:1048-1051
  75. Gartner LM. Introduction. Gartner LM, ed. *Breastfeeding in the hospital*. *Semin Perinatol*. 1994;18:475
  76. American Academy of Pediatrics, Committee on Nutrition. Nutritional needs of low-birth-weight infants. *Pediatrics*. 1985;75:976-986
  77. American Dietetic Association. Position of the American Dietetic Association: promotion of breast feeding. *Am Diet Assoc Rep*. 1986;86:1580-1585
  78. Schanler RJ, Hurst NM. Human milk for the hospitalized preterm infant. *Semin Perinatol*. 1994;18:476-486
  79. Lemons P, Stuart M, Lemons JA. Breast-feeding the premature infant. *Clin Perinatol*. 1986;13:111-122
  80. Righard L, Alade MO. Effect of delivery room routines on success of first breast-feed. *Lancet*. 1990;336:1105-1107
  81. Widstrom AM, Wahlberg V, Matthiesen AS, et al. Short-term effects of early suckling and touch of the nipple on maternal behavior. *Early Hum Dev*. 1990;21:153-163
  82. Van Den Bosch CA, Bullough CHW. Effect of early suckling on term neonates' core body temperature. *Ann Trop Paediatr*. 1990;10:347-353
  83. Wiberg B, Humble K, de Chateau P. Long-term effect on mother-infant behavior of extra contact during the first hour post partum v follow-up at three years. *Scand J Soc Med*. 1989;17:181-191
  84. Sosa R, Kennell JH, Klaus M, et al. The effect of early mother-infant contact on breast feeding, infection and growth. In: Lloyd JK, ed. *Breast-feeding and the Mother*. Amsterdam: Elsevier; 1976:179-193
  85. Gunther M. Instinct and the nursing couple. *Lancet*. 1955;575-578
  86. Anderson GC. Risk in mother-infant separation postbirth. *IMAGE: J Nurs Sch*. 1989;21:196-199
  87. De Carvalho M, Klaus MH, Merkatz RB. Frequency of breast-feeding and serum bilirubin concentration. *Am J Dis Child*. 1982;136:737-738
  88. De Carvalho M, Robertson S, Friedman A, et al. Effect of frequent breast-feeding on early milk production and infant weight gain. *Pediatrics*. 1983;72:307-311
  89. Klaus MH. The frequency of suckling—neglected but essential ingredient of breast-feeding. *Obstet Gynecol Clin North Am*. 1987;14:623-633
  90. Mohrbacher N, Stock J. *The Breastfeeding Answer Book*. Schaumburg, IL: La Leche League International; 1997:60
  91. Procianny RS, Fernandes-Filho PH, Lazaro L, et al. The influence of rooming-in on breastfeeding. *J Trop Pediatr*. 1983;29:112-114
  92. The American Academy of Pediatrics and the American College of Obstetricians and Gynecologists. *Guidelines for Perinatal Care*. 3rd ed. Washington, DC: ACOG, AAP; 1992:183
  93. American Academy of Pediatrics, Committee on Nutrition. *Pediatric Nutrition Handbook*. 3rd ed. Elk Grove Village, IL: AAP; 1993:7
  94. Shrago L. Glucose water supplementation of the breastfed infant during the first three days of life. *J Human Lactation*. 1987;3:82-86
  95. Goldberg NM, Adams E. Supplementary water for breast-fed babies in a hot and dry climate—not really a necessity. *Arch Dis Child*. 1983;58:73-74
  96. Righard L, Alade MO. Sucking technique and its effect on success of breastfeeding. *Birth*. 1992;19:185-189
  97. Neifert M, Lawrence R, Seacat J. Nipple confusion: toward a formal definition. *J Pediatr*. 1995;126:S125-129
  98. Victora CG, Tomasi E, Olinto MTA, et al. Use of pacifiers and breast-feeding duration. *Lancet*. 1993;341:404-406
  99. The American Academy of Pediatrics, Committee on Practice and Ambulatory Medicine. Recommendations for preventive pediatric health care. *Pediatrics*. 1995;96:373
  100. Ahn CH, MacLean WC. Growth of the exclusively breast-fed infant. *Am J Clin Nutr*. 1980;33:183-192
  101. The American Academy of Pediatrics, Committee on Nutrition. The use of whole cow's milk in infancy. *Pediatrics*. 1992;89:1105-1109
  102. Saarinen UM. Need for iron supplementation in infants on prolonged breast feeding. *J Pediatr*. 1978;93:177-180
  103. Dallman PR. Progress in the prevention of iron deficiency in infants. *Acta Paediatr Scand Suppl*. 1990;365:28-37
  104. Sugarman M, Kendall-Tackett KA. Weaning ages in a sample of American women who practice extended breastfeeding. *Clin Pediatr*. 1995; 34:642-647
  105. Ashraf RN, Jilil F, Aperia A, et al. Additional water is not needed for healthy breast-fed babies in a hot climate. *Acta Paediatr Scand*. 1993;82:1007-1011
  106. Heinig MJ, Nommsen LA, Peerson, JM, et al. Intake and growth of breast-fed and formula-fed infants in relation to the timing of introduction of complementary foods: the Darling study. *Acta Paediatr Scand*. 1993;82:999-1006
  107. American Academy of Pediatrics, Committee on Fetus and Newborn, and American College of Obstetricians and Gynecologists. Maternal and newborn nutrition. In: *Guidelines for Perinatal Care*. 4th ed. Washington, DC: ACOG, AAP; 1997
  108. Pisacane A, De Visia B, Valiante A, et al. Iron status in breast-fed infants. *J Pediatr*. 1995;127:429-431
  109. American Academy of Pediatrics, Committee on Nutrition. Vitamin and mineral supplement needs in normal children in the United States. *Pediatrics*. 1980;66:1015-1021
  110. American Academy of Pediatrics, Committee on Nutrition. Fluoride supplementation for children: interim policy recommendations. *Pediatrics*. 1995;95:777
  111. Freed GL, Clark SJ, Lohr JA, et al. Pediatrician involvement in breast-feeding promotion: a national study of residents and practitioners. *Pediatrics*. 1995;96:490-494

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