

Subject: breastfeeding submission

Re Breastfeeding

I am a GP and mother of four children who have enjoyed breastfeeding to aged 3 to 6.

In recent years I have been writing about pregnancy, birth and parenting and the attached is a chapter from my book *Gentle Birth, Gentle Mothering: The wisdom and science of gentle choices in pregnancy, birth and parenting* about my experiences, especially with extended, also called 'full term' breastfeeding.

As you will read, the benefits of breastfeeding continue over the years, although there is really very little research past around age two, which is the recommended minimum age of weaning, according to the World Health Organization. Note especially the reduction in premenopausal breast cancer and osteoporosis for the mother, and please see the website <http://www.promom.org/101/index.html> for a full referenced list of breastfeeding benefits.

I have two more points that I would like to make.

Firstly, I would like to see MUCH more financial support for the Australian Breastfeeding Association. As a member for more than 15 years, I am always unhappy to see how many appeals they need to make to get the funding to do their work. This organization would save the Australian government MILLIONS of dollars in health costs because of their support for breastfeeding mothers and especially their volunteer-staffed 24 hour help line. For example, Smith and colleagues estimated that the cost of formula feeding, and its impact on 5 common illnesses in children that present to the hospital system in ACT is AU\$1-2 million per year. Ball and Wright in the US estimated an additional costs of around US\$400 per non-breastfed child in relation to the community/hospital care of 3 illnesses that are reduced by breastfeeding. (abstracts below) I believe the ABA needs at least several million dollars in core funding. Please can consider making this one of your recommendations

Second, I would like to highlight that we need to promote normal birth in order to get mothers and babies off to a good start for breastfeeding. I believe that birth and breastfeeding are not separable and that improving our breastfeeding rates includes reducing the extreme rates of birth intervention that we have in Australia. Breastfeeding rates are lower following caesarean and may also be affected by labour medications including epidurals and by early infant-mother separation. See attached excerpts (also below) from my book.

I would suggest that we could reduce intervention rates, and give mothers the support they need to begin breastfeeding, with one-on-one midwifery care for all Australian women. This is the norm in New Zealand, where breastfeeding rates are increasing. Women who need birth intervention will also benefit from one-on-one care (and therefore consistent advice) from their own midwife in supporting breastfeeding. See <http://www.maternitycoalition.org.au/home/modules/campaigns/index.php?id=6> for the National Maternity Action Plan.

Note also that normal birth will also benefit the baby and his/her initiation of breastfeeding. Every mammalian baby is born with the instinctive knowledge of how to attach to the mother's nipple and breastfeed, because this is a survival behaviour. Human babies are no exception, but this ability is easily disrupted by drugs and by separation for mother- see attached excerpts on early separation and its negative effects on breastfeeding. I

am very excited to see the growth of baby friendly hospital certification in Australia, especially because of its promotion of continuity of contact between mother and baby after birth. I believe that promoting mother-newborn contact and/or BFHI would be another important recommendation.

Thanks for this wonderful opportunity to contribute,

Sarah

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1: [Aust N Z J Public Health. 2002 Dec;26\(6\):543-51. Links](#)

Hospital system costs of artificial infant feeding: estimates for the Australian Capital Territory.

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OBJECTIVE: To estimate the attributable ACT hospital system costs of treating selected infant and childhood illnesses having known associations with early weaning from human milk. **METHOD:** We identified relative risks of infant and childhood morbidity associated with exposure to artificial feeding in the early months of life vs. breastfeeding from cohort studies cited by the American Academy of Pediatrics in 1997 as establishing the protective effect of breastfeeding. Data for ACT breastfeeding prevalence is assessed from a 1997 prospective population-based cohort study of 1,295 women. ACT Hospital Morbidity Data and DRG treatment costs were used to estimate the attributable fraction of costs of hospitalisation for gastrointestinal illness, respiratory illness and otitis media, eczema, and necrotising enterocolitis. **RESULTS:** Although initiation rates were high (92%), less than one in 10 ACT infants are exclusively breastfed for the recommended six months, mainly due to supplementation or weaning on to formula within the first three months and the early introduction of solids by breastfeeding mothers. This study suggests the attributable hospitalisation costs of early weaning in the ACT are about \$1-2 million a year for the five illnesses. **CONCLUSIONS AND IMPLICATIONS:** Early weaning from breastmilk is associated with significant hospital costs for treatment of gastrointestinal illness, respiratory illness and otitis media, eczema, and necrotising enterocolitis. These costs are minimum estimates of the cost of early weaning as they exclude numerous other chronic or common illnesses and out-of-hospital health care costs. Higher rates of exclusive breastfeeding would reduce these costs. Interventions to protect and support breastfeeding are likely to be cost-effective for the public health system.

PMID: 12530799 [PubMed - indexed for MEDLINE]

Health care costs of formula-feeding in the first year of life.

Ball TM, Wright AL.

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OBJECTIVE: To determine the excess cost of health care services for three illnesses in formula-fed infants in the first year of life, after adjusting for potential confounders.

METHODS: Frequency of health service utilization for three illnesses (lower respiratory tract illnesses, otitis media, and gastrointestinal illness) in the first year of life was assessed in relation to duration of exclusive breastfeeding in the Tucson Children's Respiratory Study (n = 944) and the Dundee Community Study (Scottish study, n = 644). Infants in both studies were healthy at birth and represented nonselected, population-based samples. Children were classified as never breastfed, partially breastfed, or exclusively breastfed, based on their feeding status during the first 3 months of life. Frequency of office visits and hospitalizations for the three illnesses was adjusted for maternal education and maternal smoking, using analysis of variance. Cost estimates, from the perspective of the health care provider/payer, were based on the direct medical costs during 1995 within a large managed care health care system. **RESULTS:** In the first year of life, after adjusting for confounders, there were 2033 excess office visits, 212 excess days of hospitalization, and 609 excess prescriptions for these three illnesses per 1000 never-breastfed infants compared with 1000 infants exclusively breastfed for at least 3 months. These additional health care services cost the managed care health system between \$331 and \$475 per never-breastfed infant during the first year of life. **CONCLUSIONS:** In addition to having more illnesses, formula-fed infants cost the health care system money. Health care plans will likely realize substantial savings, as well as providing improved care, by supporting and promoting exclusive breastfeeding.

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Extended Breastfeeding – the gift of a lifetime

Excerpted from *Gentle Birth, Gentle Mothering: The wisdom and science of gentle choices in pregnancy, birth, and parenting*

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Emma, my first-born, was 14 months old. I had enrolled in a course, and, with the feeling of my life opening up again, had begun to wean. It was at that time, a junction between two worlds, that I read a book called *Mothering Your Nursing Toddler*.¹

Starting with the assumption that extended breastfeeding is satisfying for both mother and child, the author, Norma Jane Bumgarner, writes of the security, confidence, and self-esteem that we can give our children when we allow them to nurse and wean according to their own schedule. With this new information, and a glad and open heart, I recommitted to breastfeeding and I went on to nurse Emma for three more years. The ease and pleasure of extended breastfeeding continued with Emma's three younger siblings, who also breastfed to around four years of age.

These four unique but overlapping experiences have shown me the benefits of an extended

nursing relationship; my children have displayed a physical resilience and emotional independence that comes, I believe, from the access to loving arms and the secure base that breastfeeding provided. Over the years, I have also learned about the more tangible advantages of extended breastfeeding, which is becoming more commonplace as women rediscover the pleasures of devoted mothering in their children's early years.

Breastfeeding is well accepted here in Australia, with around 80 per cent of babies starting out on the breast. By three months, 54 per cent are still feeding and this has dropped to 32 per cent by six months,² and 23 percent by 12 months.³ In the US, 70 per cent of mothers initiate breastfeeding, 33 per cent of babies are still breastfed at six months and 20 per cent at 12 months.⁴ In the UK, 61 per cent of mothers initiate nursing, 21 per cent are nursing at six months, and 19 per cent at nine months.⁵

As these figures show, breastfeeding a toddler is still uncommon in most western countries, but there has also been a recent increase in community awareness and professional support for prolonged breastfeeding. The American Academy of Pediatrics now recommends breastfeeding for at least 12 months,⁶ and the World Health Organisation recommends that, for optimal growth, development and health, breastfeeding should continue for up to two years or beyond.⁷ The American Academy of Family Physicians states, "Breastfeeding beyond the first year offers considerable benefits to both mother and child, and should continue as long as mutually desired."⁸

Extended breastfeeding also has strong historical and cross-cultural support. Mothers in most traditional cultures breastfeed their babies into at least the second year, as did most mothers in western Europe until this century.⁹ Even in medieval times, the dangers of early weaning were understood, and sickly infants, twins, and males were breastfed longer than the usual one to two years.¹⁰ Katherine A. Dettwyler, associate professor of anthropology and nutrition at Texas A&M University estimates, from anthropological data, that the natural age for weaning is between four and six years.⁹

Extended breastfeeding continues to offer significant benefits for modern mothers and babies. Babies who are breastfed through the first year of life have fewer illnesses, both minor and major,¹¹¹² and a lower chance of death,¹³ which extends to at least three years of age.¹⁴ Breastfeeding gives young children protection from deaths due to SIDS and injuries, as well as infections.¹³ The American Academy of Family Physicians states, "If the child is younger than two years of age, the child is at increased risk of illness if weaned."⁸

The benefits of breastfeeding increase with duration,¹³ and the disease-protective effects actually increase as weaning approaches. Some have called this increased concentration of antibodies, as breastfeeding declines, the "parting gift" to the baby, ensuring on-going good health and strong immunity.¹⁵¹⁶

Breastfeeding into the second year also gives a strong benefit in terms of nutrition. Research from Kenya, where the nursing mother's nutrition was judged to be marginal, has estimated that breastmilk can supply up to one-third of a toddler's daily energy needs, as well as two-thirds of fat requirements, 58 per cent of vitamin A requirements, and almost a third of calcium needs.¹⁷ A US study shows that breastfeeding through the first year has an ongoing dietary benefit, giving a better

food intake, and less need for maternal persuasion to eat well, in the second year.¹⁸

Extended breastfeeding also has physical benefits for mothers, partly through the release of hormones in her body as she nurses. Prolactin, sometimes known as the mothering hormone, has been shown in humans and animals to have a relaxing effect on the mother and to enhance her mothering abilities and desire for contact with her young.¹⁹ Oxytocin, which is responsible for the let-down reflex during breastfeeding, has been called the love hormone because it brings feelings of calm and connectedness.^{20 21} Breastfeeding also releases beta-endorphin, a hormone of pleasure, for both mother and baby, and this hormone may be important in reducing fertility in breastfeeding mothers.²²

As well as these immediate benefits, the nursing mother also receives protection against premenopausal breast cancer (more so with prolonged nursing);²³ ovarian cancer; and osteoporosis.²⁴ One study estimated that our current high rates of breast cancer in western countries would be reduced by almost half if we increased our lifetime duration of breastfeeding.²³

As a GP (family physician), all of these benefits impress me, but as a breastfeeding mother, the best aspects of extended breastfeeding have been the relationships with my nurslings. Breastfeeding has helped me to stay connected and in love; relaxed and open, and reminded me that, as big as my nurslings may sometimes seem, they are in reality still young, with strong needs for nurture. Through extended breastfeeding, we can promote health and happiness in our families, and give our children the gift of a lifetime.

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References

1. Bumgarner N. *Mothering Your Nursing Toddler*. Schaumburg IL: La Leche League International, 2000 www.myntoddler.com.
2. Australian Breastfeeding Association. Australian Breastfeeding Leadership Plan. Melbourne: Australian Breastfeeding Association, 2004 <http://www.breastfeeding.asn.au/advocacy/030804abastrategy.pdf>.
3. Australian Bureau of Statistics. Breastfeeding in Australia, Publication No. 4810.0.55.001, 2003.
4. Abbott Laboratories. Mothers Survey, Ross Products Division, Abbott Laboratories: Abbott Laboratories, 2003 http://www.ross.com/images/library/BF_Trends_2002.pdf.
5. Hamlyn B, et al. Infant Feeding 2000: A survey conducted on behalf of the Department of Health, the Scottish Executive, the National Assembly for Wales and the Department of Health, Social Services and Public Safety in Northern Ireland. London: Crown Copyright, 2003 <http://www.dh.gov.uk/assetRoot/04/05/97/62/04059762.pdf>.
6. Gartner LM, et al. Breastfeeding and the use of human milk. *Pediatrics* 2005;115(2):496-506.
7. World Health Organisation. Global Strategy for Infant and Young Child Feeding. Geneva: World Health Organisation, 2003 http://www.who.int/child-adolescent-health/New_Publications/NUTRITION/gs_iycf.pdf.
8. American Academy of Family Physicians. AAFP Policy Statement on Breastfeeding, 2005 <http://www.aafp.org/x6633.xml>.
9. Dettwyler K. A Time to Wean: the hominid blueprint for the natural age of weaning in modern human populations. In: Stuart-Macadam P, Dettwyler K, eds. *Breastfeeding: Biocultural Perspectives*. New York: Aldine de Gruyter, 1995.
10. Filds V. The Culture and Biology of Breastfeeding: an historical review of Western Europe. In: Stuart-Macadam P, Dettwyler K, eds. *Breastfeeding: Biocultural Perspectives*. New York: Aldine de Gruyter, 1995.
11. Cunningham AS. Morbidity in breast-fed and artificially fed infants. *J Pediatr* 1977;90(5):726-9.
12. Dewey KG, et al. Differences in morbidity between breast-fed and formula-fed infants. *J Pediatr*

- 1995;126(5 Pt 1):696-702.
13. Chen A, Rogan WJ. Breastfeeding and the risk of postneonatal death in the United States. *Pediatrics* 2004;113(5):e435-9.
 14. van den Bogaard C, et al. The relationship between breast-feeding and early childhood morbidity in a general population. *Fam Med* 1991;23(7):510-5.
 15. Lawrence R, Lawrence R. *Breastfeeding: A guide for the medical profession*. 5th ed. Sydney: Mosby, 1999.
 16. Hatherley P. *The Homeopathic Physician's guide to Lactation*. Brisbane: Luminoz, 2004.
 17. Onyango AW, et al. The contribution of breast milk to toddler diets in western Kenya. *Bull World Health Organ* 2002;80(4):292-9.
 18. Fisher JO, et al. Breast-feeding through the first year predicts maternal control in feeding and subsequent toddler energy intakes. *J Am Diet Assoc* 2000;100(6):641-6.
 19. Grattan DR. The actions of prolactin in the brain during pregnancy and lactation. *Prog Brain Res* 2001;133:153-71.
 20. Uvnas-Moberg K. *The Oxytocin Factor*. Cambridge MA: Da Capo Press, 2003.
 21. Uvnas-Moberg K. Oxytocin linked antistress effects--the relaxation and growth response. *Acta Physiol Scand Suppl* 1997;640:38-42.
 22. Tay CC. Mechanisms controlling lactational infertility. *J Hum Lact* 1991;7(1):15-8.
 23. Collaborative Group on Hormonal Factors in Breast Cancer. Breast cancer and breastfeeding: collaborative reanalysis of individual data from 47 epidemiological studies in 30 countries, including 50302 women with breast cancer and 96973 women without the disease. *Lancet* 2002;360(9328):187-95.
 24. Labbok MH. Effects of breastfeeding on the mother. *Pediatr Clin North Am* 2001;48(1):143-58.

Chapter 13: Undisturbed Birth: Mother Nature's blueprint for safety, ease, and ecstasy (excerpt)

Excerpted from *Gentle Birth, Gentle Mothering: The Wisdom and Science of Gentle Choices in Pregnancy, Birth and Parenting* by Dr Sarah J Buckley, (One Moon Press, 2005)

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(Caesarean surgery ...)

Another study looked at the breastfeeding hormones prolactin and oxytocin on day two, comparing women who had given birth vaginally with women who had undergone emergency caesarean surgery. In the caesarean group, prolactin levels did not rise as expected with breastfeeding, and oxytocin pulses were reduced or absent. In this study, first suckling had been at 240 minutes average for caesarean babies, and 75 minutes average for babies vaginally born. The authors of this study believe that these differences may be partly explained by the delay in the first breastfeed, and conclude,

These data indicate that early breastfeeding and physical closeness may be associated not only with more interaction between mother and child, but also with endocrine [hormonal] changes in the mother.²⁴¹

The possible sequelae of these hormonal changes are explored in a recent study of 185 breastfeeding new mothers and babies. The study found that healthy, breastfeeding caesarean babies had a significantly lower breastmilk intake for the first six days, compared to babies born after a normal birth, even when controlling for the mothers' previous birth and breastfeeding experience, and for delay in first feeding.

These researchers found that only 20 per cent of caesarean babies had regained their birth

weight by day six, compared to 40 per cent of babies in the normal birth group.²⁴² The authors conclude that there is a lag in “breastmilk transfer” (BMT) after a caesarean. Other research has shown that early and frequent suckling positively influences milk production and the duration of breastfeeding.^{243, 244}

Many other studies have shown significantly reduced breastfeeding rates after caesarean surgery,²⁴⁵ which may reflect all of the above effects. These findings also highlight the extra assistance that caesarean mothers and babies may need in establishing breastfeeding.

These caesarean studies not only indicate important links between birth, hormones, and breastfeeding, but also show how an optimal birth experience is designed to enhance the long-term health of mother and baby. For example, successful and long-term breastfeeding confers advantages such as reduced risk of breast cancer and osteoporosis for the mother, and increased intelligence, reduced risk of diabetes, and less obesity long-term for the child.²⁴⁶

The connections between events at birth and long-term health certainly deserve more study.²⁴⁷ But, we cannot afford to wait many years for researchers to prove the benefits of an undisturbed birth. Perhaps the best we can do is to trust our instincts and vote with our birthing bodies, choosing (and supporting) models of care that increase the chances of undisturbed – and therefore safer, easier and more ecstatic – birthing.

Early separation

There are many animal studies that show that removing newborns from their mothers has negative effects on maternal-infant care and on the growing offspring. For some species, there is an inviolable need to lick and smell the offspring; without this attachment will not occur. There seems also to be a critical period for mammals – the first hour or so after birth – when this process is most easily disrupted.

Human studies also support the importance of not disturbing this early contact. Swedish researchers noted that if an infant’s lips touched the mother’s nipple in the first hour of life, the mother kept her infant with her for an extra 100 minutes every day compared to mothers who did not experience suckling until later.²⁴⁸

Early breastfeeding also confers a lifelong benefit to the baby’s gut system. Klaus quotes the research of Uvnas-Moberg,²⁴⁹ who has found that

... when the infant suckles from the breast, there is an outpouring of 19 different gastrointestinal hormones in both the mother and the infant, including insulin, cholecystokinin, and gastrin. Five of these hormones stimulate the growth of intestinal villi in the mother and the infant. As a result, with each feeding, there is an increased intestinal surface area for nutrient absorption. The hormonal release is stimulated by the touch of the mother’s nipple by her infant’s lips. This increases oxytocin in both the mother’s brain and the infant’s brain, which stimulates the vagus nerve, then causes the increase in the output of gastrointestinal hormones. Before the development of modern agriculture and grain storage 10,000 years ago, these responses in the infant and mother were essential for survival when famine was common.²⁵⁰

Undisturbed early contact, especially skin-to-skin, fulfils the newborn's physical needs, giving efficient temperature regulation, easy access to the mother's breast, and less crying than babies wrapped and placed in cots.²⁵¹ One study showed that newborns who experienced "kangaroo care" – that is, uninterrupted skin-to-skin contact with the mother – in the first hour after birth were less stressed and more organised in their behaviour, cried less, and slept longer, compared to babies who were routinely separated.²⁵²

Researchers have also identified a separation distress call in the human neonate, equivalent to that in other mammalian species. This cry, which is almost certainly genetically encoded, signals the newborn's need for close body contact with the mother after birth and ceases at reunion. The authors note, "These findings are compatible with the opinion that the most appropriate position of the healthy full-term newborn baby after birth is in close body contact with the mother."²⁵³

References

241. Nissen E, et al. Different patterns of oxytocin, prolactin but not cortisol release during breastfeeding in women delivered by caesarean section or by the vaginal route. *Early Hum Dev* 1996;45(1-2):103-18, p 116.
242. Evans KC, et al. Effect of caesarean section on breast milk transfer to the normal term newborn over the first week of life. *Arch Dis Child Fetal Neonatal Ed* 2003;88(5):F380-2.
243. Salariya EM, et al. Duration of breast-feeding after early initiation and frequent feeding. *Lancet* 1978;2(8100):1141-3.
244. de Chateau P, Wiberg B. Long-term effect on mother-infant behaviour of extra contact during the first hour post partum. II. A follow-up at three months. *Acta Paediatr Scand* 1977;66(2):145-51.
245. DiMatteo MR, et al. Cesarean childbirth and psychosocial outcomes: a meta-analysis. *Health Psychol* 1996;15(4):303-14.
246. Burby L. *101 Reasons to Breastfeed Your Child*: Promotion of Mothers' Milk Inc, 2001 <http://www.promom.org/101/>.
247. Odent M. Primal Health Database: Birthworks, 2003 <http://www.birthworks.org/primalhealth/>.
248. Widstrom AM, et al. Short-term effects of early suckling and touch of the nipple on maternal behaviour. *Early Hum Dev* 1990;21(3):153-63.
249. Uvnas-Moberg K. The gastrointestinal tract in growth and reproduction. *Sci Am* 1989;261(1):78-83.
250. Klaus M. Mother and infant: early emotional ties. *Pediatrics* 1998;102(5 Suppl E):1244-6, p 1246.
251. Christensson K, et al. Temperature, metabolic adaptation and crying in healthy full-term newborns cared for skin-to-skin or in a cot. *Acta Paediatr* 1992;81(6-7):488-93.
252. Ferber SG, Makhoul IR. The effect of skin-to-skin contact (kangaroo care) shortly after birth on the neurobehavioral responses of the term newborn: a randomized, controlled trial. *Pediatrics* 2004;113(4):858-65.
253. Christensson K, et al. Separation distress call in the human neonate in the absence of maternal body contact. *Acta Paediatr* 1995;84(5):468-73, p 468.

Ch 14: Epidurals: Risks and Concerns for Mother and Baby (excerpt)

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Breastfeeding

As with neurobehaviour, effects [of epidurals] on breastfeeding are poorly

studied, and more recent RCTs comparing exposure to epidurals and opiates are especially misleading, because opiates have a well-recognised negative effect on early breastfeeding behaviour and success.^{89–93}

Epidurals may affect the experience and success of breastfeeding through several mechanisms. First, the epidural-exposed baby may have neurobehavioural abnormalities caused by drug exposure, which are likely to be maximal in the hours following birth. This is a critical time for the initiation of breastfeeding. Recent epidural research has found (rather obviously) that the higher the baby's neurobehaviour (NACS) score one hour after birth, the higher their score for early breastfeeding behaviour.⁹⁴

In another study, the baby's breastfeeding abilities – as measured by the Infant Breastfeeding Assessment Tool (IBFAT) – were highest amongst unmedicated babies, lower for babies exposed to epidurals or IV opiates and lowest for babies exposed to both. Infants with lower scores were weaned earlier although overall, similar numbers in all groups were breastfeeding at six weeks.⁹⁵ In other research, babies exposed to epidurals and spinals were more likely to lose weight in hospital, which may reflect poor feeding efficiency.⁹⁶ Other research has suggested that newborn breastfeeding behaviour and NACS score may be normal when ultra-low dose epidural is used, although even in this study, babies with higher drug levels had lower neurobehaviour (NACS) scores at two hours.⁹⁷

Second, epidurals may affect the new mother, so that breastfeeding is more difficult. This is likely if she has experienced a long labour, an instrumental delivery, or separation from her baby, all of which are more likely following an epidural. Hormonal disruptions may also contribute, as oxytocin is a major hormone of breastfeeding.

Baumgarder found that babies born after epidurals were less likely to be fully breastfed on hospital discharge; this was a special risk for epidural babies who did not feed in the first hour after birth.⁹⁸ A Finnish survey records that 67 percent of women who had laboured with an epidural reported partial or full formula-feeding in the first 12 weeks compared to 29 percent of non-epidural mothers; epidural mothers were also more likely to report having “not enough milk”.⁹⁹ Australian researchers found that epidural first-time mothers weaned their babies earlier than mothers who had used alternative labour analgesia.¹⁰⁰

An observational US study also found earlier weaning by epidural mothers,¹⁰¹ although other US research did not concur.¹⁰² (The latter hospital had policies that were strongly supportive of breastfeeding – including not separating mothers and babies after birth – and an exceptional rate of breastfeeding in all groups: over 70 percent at six weeks. This study highlights the positive effects of breastfeeding support for epidural mothers).

Two groups of Swedish researchers have looked at the subtle

but complex breastfeeding and pre-breastfeeding behaviour of unmedicated newborns. Righard has documented that, when placed skin-to-skin on the mother's chest, a newborn can crawl up, find the nipple and self-attach. Newborns affected by opiate drugs in labour or separated from their mothers briefly after birth lose much of this ability.⁸⁹ Ransjo-Arvidson found that newborns exposed to labour analgesia (mostly opiates, but including some epidural-affected newborns) were also disorganised in their pre-feeding behaviour – nipple massage and licking and hand sucking – compared to unmedicated newborns.⁹¹

References

89. Righard L, Alade MO. Effect of delivery room routines on success of first breast-feed. *Lancet* 1990; 336(8723):1105–7.
90. Matthews MK. The relationship between maternal labour analgesia and delay in the initiation of breastfeeding in healthy neonates in the early neonatal period. *Midwifery* 1989; 5(1):3–10.
91. Ransjo-Arvidson AB, et al. Maternal analgesia during labor disturbs newborn behavior: effects on breastfeeding, temperature, and crying. *Birth* 2001; 28(1):5–12.
92. Nissen E, et al. Effects of maternal pethidine on infants' developing breast feeding behaviour. *Acta Paediatr* 1995; 84(2):140–5.
93. Rajan L. The impact of obstetric procedures and analgesia/anaesthesia during labour and delivery on breast feeding. *Midwifery* 1994; 10(2): 87–103.
94. Radzimirski S. Neurobehavioral functioning and breastfeeding behavior in the newborn. *J Obstet Gynecol Neonatal Nurs* 2005; 34(3):335–41.
95. Riordan J, et al. The effect of labor pain relief medication on neonatal suckling and breastfeeding duration. *J Hum Lact* 2000; 16(1):7–12.
96. Dewey KG, et al. Risk factors for suboptimal infant breastfeeding behavior, delayed onset of lactation, and excess neonatal weight loss. *Pediatrics* 2003; 112(3 Pt 1):607–19.
97. Radzimirski S. The effect of ultra low dose epidural analgesia on newborn breastfeeding behaviors. *J Obstet Gynecol Neonatal Nurs* 2003; 32(3):322–31.
98. Baumgarder DJ, et al. Effect of labor epidural anesthesia on breast-feeding of healthy full-term newborns delivered vaginally. *J Am Board Fam Pract* 2003; 16(1):7–13.
99. Volmanen P, et al. Breast-feeding problems after epidural analgesia for labour: a retrospective cohort study of pain, obstetrical procedures and breast-feeding practices. *Int J Obstet Anesth* 2004; 13(1):25–9.
100. Henderson JJ, et al. Impact of intrapartum epidural analgesia on breastfeeding duration. *Aust N Z J Obstet Gynaecol* 2003; 43(5):372–7.
101. Kiehl EM, et al. Social status, mother–infant time together, and breastfeeding duration. *J Hum Lact* 1996; 12(3):201–6.
102. Halpern SH, et al. Effect of labor analgesia on breastfeeding success. *Birth* 1999; 26(2):83–8.

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In the UK, 61 per cent of mothers initiate nursing, 21 per cent are nursing at six months, and 19 per cent at nine months.⁵

As these figures show, breastfeeding a toddler is still uncommon in most western countries, but there has also been a recent increase in community awareness and professional support for prolonged breastfeeding. The American Academy of Pediatrics now recommends breastfeeding for at least 12 months,⁶ and the World Health Organisation recommends that, for optimal growth, development and health, breastfeeding should continue for up to two years or beyond.⁷ The American Academy of Family Physicians states, "Breastfeeding beyond the first year offers considerable benefits to both mother and child, and should continue as long as mutually desired."⁸

Extended breastfeeding also has strong historical and cross-cultural support. Mothers in most traditional cultures breastfeed their babies into at least the second year, as did most mothers in western Europe until this century.⁹ Even in medieval times, the dangers of early weaning were understood, and sickly infants, twins, and males were breastfed longer than the usual one to two years.¹⁰ Katherine A. Dettwyler, associate professor of anthropology and nutrition at Texas A&M University estimates, from anthropological data, that the natural age for weaning is between four and six years.⁹

Extended breastfeeding continues to offer significant benefits for modern mothers and babies. Babies who are breastfed through the first year of life have fewer illnesses, both minor and major,^{11 12} and a lower chance of death,¹³ which extends to at least three years of age.¹⁴ Breastfeeding gives young children protection from deaths due to SIDS and injuries, as well as infections.¹³ The American Academy of Family Physicians states, "If the child is younger than two years of age, the child is at increased risk of illness if weaned."⁸

The benefits of breastfeeding increase with duration,¹³ and the disease-protective effects actually increase as weaning approaches. Some have called this increased concentration of antibodies, as breastfeeding declines, the

“parting gift” to the baby, ensuring on-going good health and strong immunity.^{15 16}

Breastfeeding into the second year also gives a strong benefit in terms of nutrition. Research from Kenya, where the nursing mother’s nutrition was judged to be marginal, has estimated that breastmilk can supply up to one-third of a toddler’s daily energy needs, as well as two-thirds of fat requirements, 58 per cent of vitamin A requirements, and almost a third of calcium needs.¹⁷ A US study shows that breastfeeding through the first year has an ongoing dietary benefit, giving a better food intake, and less need for maternal persuasion to eat well, in the second year.¹⁸

Extended breastfeeding also has physical benefits for mothers, partly through the release of hormones in her body as she nurses. Prolactin, sometimes known as the mothering hormone, has been shown in humans and animals to have a relaxing effect on the mother and to enhance her mothering abilities and desire for contact with her young.¹⁹ Oxytocin, which is responsible for the let-down reflex during breastfeeding, has been called the love hormone because it brings feelings of calm and connectedness.^{20 21} Breastfeeding also releases beta-endorphin, a hormone of pleasure, for both mother and baby, and this hormone may be important in reducing fertility in breastfeeding mothers.²²

As well as these immediate benefits, the nursing mother also receives protection against pre-menopausal breast cancer (more so with prolonged nursing);²³ ovarian cancer; and osteoporosis.²⁴ One study estimated that our current high rates of breast cancer in western countries would be reduced by almost half if we increased our lifetime duration of breastfeeding.²³

As a GP (family physician), all of these benefits impress me, but as a breastfeeding mother, the best aspects of extended breastfeeding have been the relationships with my nurslings. Breastfeeding has helped me to stay connected and in love; relaxed and open, and reminded me that, as big as my nurslings may sometimes seem, they are in reality still young, with strong

needs for nurture. Through extended breastfeeding, we can promote health and happiness in our families, and give our children the gift of a lifetime.

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References

1. Bumgarner N. *Mothering Your Nursing Toddler*. Schaumburg IL: La Leche League International, 2000 www.myntoddler.com.
2. Australian Breastfeeding Association. Australian Breastfeeding Leadership Plan. Melbourne: Australian Breastfeeding Association, 2004 <http://www.breastfeeding.asn.au/advocacy/030804abastrategy.pdf>.
3. Australian Bureau of Statistics. Breastfeeding in Australia, Publication No. 4810.0.55.001, 2003.
4. Abbott Laboratories. Mothers Survey, Ross Products Division, Abbott Laboratories: Abbott Laboratories, 2003 http://www.ross.com/images/library/BF_Trends_2002.pdf.
5. Hamlyn B, et al. Infant Feeding 2000: A survey conducted on behalf of the Department of Health, the Scottish Executive, the National Assembly for Wales and the Department of Health, Social Services and Public Safety in Northern Ireland. London: Crown Copyright, 2003 <http://www.dh.gov.uk/assetRoot/04/05/97/62/04059762.pdf>.
6. Gartner LM, et al. Breastfeeding and the use of human milk. *Pediatrics* 2005;115(2):496-506.
7. World Health Organisation. Global Strategy for Infant and Young Child Feeding. Geneva: World Health Organisation, 2003 http://www.who.int/child-adolescent-health/New_Publications/NUTRITION/gi_yycf.pdf.
8. American Academy of Family Physicians. AAFP Policy Statement on Breastfeeding. 2005 <http://www.aafp.org/x6633.xml>.
9. Dettwyler K. A Time to Wean: the hominid blueprint for the natural age of weaning in modern human populations. In: Stuart-Macadam P, Dettwyler K, eds. *Breastfeeding; Biocultural Perspectives*. New York: Aldine de Gruyter, 1995.
10. Filds V. The Culture and Biology of Breastfeeding: an historical review of Western Europe. In: Stuart-Macadam P, Dettwyler K, eds. *Breastfeeding; Biocultural Perspectives*. New York: Aldine de Gruyter, 1995.
11. Cunningham AS. Morbidity in breast-fed and artificially fed infants. *J Pediatr* 1977;90(5):726-9.
12. Dewey KG, et al. Differences in morbidity between breast-fed and formula-fed infants. *J Pediatr* 1995;126(5 Pt 1):696-702.
13. Chen A, Rogan WJ. Breastfeeding and the risk of postneonatal death in the United States. *Pediatrics* 2004;113(5):e435-9.
14. van den Bogaard C, et al. The relationship between breast-feeding and early childhood morbidity in a general population. *Fam Med* 1991;23(7):510-5.
15. Lawrence R, Lawrence R. *Breastfeeding: A guide for the medical profession*. 5th ed. Sydney: Mosby, 1999.

16. Hatherley P. *The Homeopathic Physician's guide to Lactation*. Brisbane: Luminoz, 2004.
17. Onyango AW, et al. The contribution of breast milk to toddler diets in western Kenya. *Bull World Health Organ* 2002;80(4):292-9.
18. Fisher JO, et al. Breast-feeding through the first year predicts maternal control in feeding and subsequent toddler energy intakes. *J Am Diet Assoc* 2000;100(6):641-6.
19. Grattan DR. The actions of prolactin in the brain during pregnancy and lactation. *Prog Brain Res* 2001;133:153-71.
20. Uvnas-Moberg K. *The Oxytocin Factor*. Cambridge MA: Da Capo Press, 2003.
21. Uvnas-Moberg K. Oxytocin linked antistress effects--the relaxation and growth response. *Acta Physiol Scand Suppl* 1997;640:38-42.
22. Tay CC. Mechanisms controlling lactational infertility. *J Hum Lact* 1991;7(1):15-8.
23. Collaborative Group on Hormonal Factors in Breast Cancer. Breast cancer and breastfeeding: collaborative reanalysis of individual data from 47 epidemiological studies in 30 countries, including 50302 women with breast cancer and 96973 women without the disease. *Lancet* 2002;360(9328):187-95.
24. Labbok MH. Effects of breastfeeding on the mother. *Pediatr Clin North Am* 2001;48(1):143-58.

Chapter 13: Undisturbed Birth: Mother Nature's blueprint for safety, ease, and ecstasy (excerpt)

Excerpted from *Gentle Birth, Gentle Mothering: The Wisdom and Science of Gentle Choices in Pregnancy, Birth and Parenting* by Dr Sarah J Buckley, (One Moon Press, 2005) www.sarahjbuckley.com

(Caesarean surgery ...)

Another study looked at the breastfeeding hormones prolactin and oxytocin on day two, comparing women who had given birth vaginally with women who had undergone emergency caesarean surgery. In the caesarean group, prolactin levels did not rise as expected with breastfeeding, and oxytocin pulses were reduced or absent. In this study, first suckling had been at 240 minutes average for caesarean babies, and 75 minutes average for babies vaginally born. The authors of this study believe that these differences may be partly explained by the delay in the first breastfeed, and conclude,

These data indicate that early breastfeeding and physical closeness may be associated not only with more interaction between mother and child, but also with endocrine [hormonal] changes in the mother.²⁴¹

The possible sequelae of these hormonal changes are explored in a recent study of 185 breastfeeding new mothers and babies. The study found that healthy, breastfeeding caesarean babies had a significantly lower breastmilk intake for the first six days, compared to babies born after a normal birth, even when controlling for the mothers' previous birth and breastfeeding experience, and for delay in first feeding.

These researchers found that only 20 per cent of caesarean babies had regained their birth weight by day six, compared to 40 per cent of babies in the normal birth group.²⁴² The authors conclude that there is a lag in "breastmilk transfer" (BMT) after a caesarean. Other research has shown that early and

frequent suckling positively influences milk production and the duration of breastfeeding.^{243, 244}

Many other studies have shown significantly reduced breastfeeding rates after caesarean surgery,²⁴⁵ which may reflect all of the above effects. These findings also highlight the extra assistance that caesarean mothers and babies may need in establishing breastfeeding.

These caesarean studies not only indicate important links between birth, hormones, and breastfeeding, but also show how an optimal birth experience is designed to enhance the long-term health of mother and baby. For example, successful and long-term breastfeeding confers advantages such as reduced risk of breast cancer and osteoporosis for the mother, and increased intelligence, reduced risk of diabetes, and less obesity long-term for the child.²⁴⁶

The connections between events at birth and long-term health certainly deserve more study.²⁴⁷ But, we cannot afford to wait many years for researchers to prove the benefits of an undisturbed birth. Perhaps the best we can do is to trust our instincts and vote with our birthing bodies, choosing (and supporting) models of care that increase the chances of undisturbed - and therefore safer, easier and more ecstatic - birthing.

Early separation

There are many animal studies that show that removing newborns from their mothers has negative effects on maternal-infant care and on the growing offspring. For some species, there is an inviolable need to lick and smell the offspring; without this attachment will not occur. There seems also to be a critical period for mammals - the first hour or so after birth - when this process is most easily disrupted.

Human studies also support the importance of not disturbing this early contact. Swedish researchers noted that if an infant's lips touched the mother's nipple in the first hour of life, the mother kept her infant with her for an extra 100

minutes every day compared to mothers who did not experience suckling until later.²⁴⁸

Early breastfeeding also confers a lifelong benefit to the baby's gut system. Klaus quotes the research of Uvnas-Moberg,²⁴⁹ who has found that

... when the infant suckles from the breast, there is an outpouring of 19 different gastrointestinal hormones in both the mother and the infant, including insulin, cholecystokinin, and gastrin. Five of these hormones stimulate the growth of intestinal villi in the mother and the infant. As a result, with each feeding, there is an increased intestinal surface area for nutrient absorption. The hormonal release is stimulated by the touch of the mother's nipple by her infant's lips. This increases oxytocin in both the mother's brain and the infant's brain, which stimulates the vagus nerve, then causes the increase in the output of gastrointestinal hormones. Before the development of modern agriculture and grain storage 10,000 years ago, these responses in the infant and mother were essential for survival when famine was common.²⁵⁰

Undisturbed early contact, especially skin-to-skin, fulfils the newborn's physical needs, giving efficient temperature regulation, easy access to the mother's breast, and less crying than babies wrapped and placed in cots.²⁵¹ One study showed that newborns who experienced "kangaroo care" - that is, uninterrupted skin-to-skin contact with the mother - in the first hour after birth were less stressed and more organised in their behaviour, cried less, and slept longer, compared to babies who were routinely separated.²⁵²

Researchers have also identified a separation distress call in the human neonate, equivalent to that in other mammalian species. This cry, which is almost certainly genetically encoded, signals the newborn's need for close body contact with the mother after birth and ceases at reunion. The authors note, "These findings are compatible with the opinion that the most appropriate position of

the healthy full-term newborn baby after birth is in close body contact with the mother."²⁵³

References

241. Nissen E, et al. Different patterns of oxytocin, prolactin but not cortisol release during breastfeeding in women delivered by caesarean section or by the vaginal route. *Early Hum Dev* 1996;45(1-2):103-18, p 116.
242. Evans KC, et al. Effect of caesarean section on breast milk transfer to the normal term newborn over the first week of life. *Arch Dis Child Fetal Neonatal Ed* 2003;88(5):F380-2.
243. Salariya EM, et al. Duration of breast-feeding after early initiation and frequent feeding. *Lancet* 1978;2(8100):1141-3.
244. de Chateau P, Wiberg B. Long-term effect on mother-infant behaviour of extra contact during the first hour post partum. II. A follow-up at three months. *Acta Paediatr Scand* 1977;66(2):145-51.
245. DiMatteo MR, et al. Cesarean childbirth and psychosocial outcomes: a meta-analysis. *Health Psychol* 1996;15(4):303-14.
246. Burby L. *101 Reasons to Breastfeed Your Child*: Promotion of Mothers' Milk Inc, 2001 <http://www.promom.org/101/>.
247. Odent M. Primal Health Database: Birthworks, 2003 <http://www.birthworks.org/primalhealth/>.
248. Widstrom AM, et al. Short-term effects of early suckling and touch of the nipple on maternal behaviour. *Early Hum Dev* 1990;21(3):153-63.
249. Uvnas-Moberg K. The gastrointestinal tract in growth and reproduction. *Sci Am* 1989;261(1):78-83.
250. Klaus M. Mother and infant: early emotional ties. *Pediatrics* 1998;102(5 Suppl E):1244-6, p 1246.
251. Christensson K, et al. Temperature, metabolic adaptation and crying in healthy full-term newborns cared for skin-to-skin or in a cot. *Acta Paediatr* 1992;81(6-7):488-93.
252. Ferber SG, Makhoul IR. The effect of skin-to-skin contact (kangaroo care) shortly after birth on the neurobehavioral responses of the term newborn: a randomized, controlled trial. *Pediatrics* 2004;113(4):858-65.
253. Christensson K, et al. Separation distress call in the human neonate in the absence of maternal body contact. *Acta Paediatr* 1995;84(5):468-73, p 468.

Ch 14: Epidurals: Risks and Concerns for Mother and Baby

Excerpted from *Gentle Birth, Gentle Mothering: The Wisdom and Science of Gentle Choices in Pregnancy, Birth and Parenting* by Dr Sarah J Buckley, (One Moon Press, 2005) www.sarahjbuckley.com

Breastfeeding

As with neurobehaviour, effects on breastfeeding are poorly studied, and more recent RCTs comparing exposure to epidural and opiates are especially misleading, because opiates have a well-recognised negative effect on early breastfeeding behaviour and success.^{89–93}

Epidurals may affect the experience and success of breastfeeding through several mechanisms. First, the epidural-exposed baby may have neurobehavioural abnormalities caused by drug exposure, which are likely to be maximal in the hours following birth. This is a critical time for the initiation of breastfeeding. Recent epidural research has found (rather obviously) that the higher the baby's neurobehaviour (NACS) score one hour after birth, the higher their score for early breastfeeding behaviour.⁹⁴

In another study, the baby's breastfeeding abilities – as measured by the Infant Breastfeeding Assessment Tool (IBFAT) – were highest amongst unmedicated babies, lower for babies exposed to epidurals or IV opiates and lowest for babies exposed to both. Infants with lower scores were weaned earlier although overall, similar numbers in all groups were breastfeeding at six weeks.⁹⁵ In other research, babies exposed to epidurals and spinals were more likely to lose weight in hospital, which may reflect poor feeding efficiency.⁹⁶ Other research has suggested that newborn breastfeeding behaviour and NACS score may be normal when ultra-low dose epidural is used, although even in this study, babies with higher drug levels had lower neurobehaviour (NACS) scores at two hours.⁹⁷

Second, epidurals may affect the new mother, so that breastfeeding is more difficult. This is likely if she has experienced a long labour, an instrumental delivery, or separation from her baby, all of which are more likely following an epidural. Hormonal disruptions may also contribute, as oxytocin is a major hormone of breastfeeding.

Baumgardner found that babies born after epidurals were less likely to be fully breastfed on hospital discharge; this was a special risk for epidural babies who did not feed in the first hour after birth.⁹⁸ A Finnish survey records that 67 percent of women who had laboured with an epidural reported partial or full formula-feeding in the first 12 weeks compared to 29 percent of non-epidural mothers; epidural mothers were also more likely to

report having “not enough milk”.⁹⁹ Australian researchers found that epidural first-time mothers weaned their babies earlier than mothers who had used alternative labour analgesia.¹⁰⁰

An observational US study also found earlier weaning by epidural mothers,¹⁰¹ although other US research did not concur.¹⁰² (The latter hospital had policies that were strongly supportive of breastfeeding – including not separating mothers and babies after birth – and an exceptional rate of breastfeeding in all groups: over 70 percent at six weeks. This study highlights the positive effects of breastfeeding support for epidural mothers).

Two groups of Swedish researchers have looked at the subtle but complex breastfeeding and pre-breastfeeding behaviour of unmedicated newborns. Righard has documented that, when placed skin-to-skin on the mother’s chest, a newborn can crawl up, find the nipple and self-attach. Newborns affected by opiate drugs in labour or separated from their mothers briefly after birth lose much of this ability.⁸⁹ Ransjo-Arvidson found that newborns exposed to labour analgesia (mostly opiates, but including some epidural-affected newborns) were also disorganised in their pre-feeding behaviour – nipple massage and licking and hand sucking – compared to unmedicated newborns.⁹¹

References

89. Righard L, Alade MO. Effect of delivery room routines on success of first breast-feed. *Lancet* 1990; 336(8723):1105–7.
90. Matthews MK. The relationship between maternal labour analgesia and delay in the initiation of breastfeeding in healthy neonates in the early neonatal period. *Midwifery* 1989; 5(1):3–10.
91. Ransjo-Arvidson AB, et al. Maternal analgesia during labor disturbs newborn behavior: effects on breastfeeding, temperature, and crying. *Birth* 2001; 28(1):5–12.
92. Nissen E, et al. Effects of maternal pethidine on infants’ developing breast feeding behaviour. *Acta Paediatr* 1995; 84(2):140–5.
93. Rajan L. The impact of obstetric procedures and analgesia/anaesthesia during labour and delivery on breast feeding. *Midwifery* 1994; 10(2): 87–103.
94. Radzysimski S. Neurobehavioral functioning and breastfeeding behavior in the newborn. *J Obstet Gynecol Neonatal Nurs* 2005; 34(3):335–41.
95. Riordan J, et al. The effect of labor pain relief medication on neonatal suckling and breastfeeding duration. *J Hum Lact* 2000; 16(1):7–12.
96. Dewey KG, et al. Risk factors for suboptimal infant breastfeeding behavior, delayed onset of lactation, and excess neonatal weight loss. *Pediatrics* 2003; 112(3 Pt 1):607–19.
97. Radzysimski S. The effect of ultra low dose epidural analgesia on newborn

- breastfeeding behaviors. *J Obstet Gynecol Neonatal Nurs* 2003; 32(3):322–31.
98. Baumgarder DJ, et al. Effect of labor epidural anesthesia on breast-feeding of healthy full-term newborns delivered vaginally. *J Am Board Fam Pract* 2003; 16(1):7–13.
99. Volmanen P, et al. Breast-feeding problems after epidural analgesia for labour: a retrospective cohort study of pain, obstetrical procedures and breast-feeding practices. *Int J Obstet Anesth* 2004; 13(1):25–9.
100. Henderson JJ, et al. Impact of intrapartum epidural analgesia on breastfeeding duration. *Aust N Z J Obstet Gynaecol* 2003; 43(5):372–7.
101. Kiehl EM, et al. Social status, mother–infant time together, and breastfeeding duration. *J Hum Lact* 1996; 12(3):201–6.
102. Halpern SH, et al. Effect of labor analgesia on breastfeeding success. *Birth* 1999; 26(2):83–8.