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The Controversy About What Constitutes Safe and Nurturant Infant Sleep Environments

Katherine H. Morgan, Maureen W. Groer, and Linda J. Smith

In 1999, the U.S. Consumer Product Safety Commission stated that cribs provide the safest sleep environment for infants. Scientific data fails to support that statement and controversy continues in the scientific, medical, and parenting communities. Recent data demonstrate that cribs may represent the most unsafe sleep. This article seeks to inform health care professionals of the issues involved in the controversy and to offer guidelines for educating parents about safe and unsafe sleep practices. *JOGNN, 35,* 684-691; 2006. DOI: 10.1111/J.1552-6909.2006.00099.x

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Since 1999, when the U.S. Safety Commission stated that cribs were the safest place for an infant to sleep (Drago & Dannenberg, 1999; Nakamura, Wind, & Danello, 1999; Scheers, 2000; U.S. Consumer Product Safety Commission, 1999), a debate has raged among scientific, medical, parenting (Harmon, 2005), and, increasingly, law enforcement groups about where infants should sleep. Historically, infants have slept with their mothers in the same bed, which is called "bedsharing." In western countries, infants may be placed to sleep alone in a crib, a practice called "crib sleeping," which often extends to placing the infant in a room separate from the parents. A third term, "co-sleeping," has arisen to describe any practice in which the baby sleeps in the same room as the adult. Co-sleeping is a broad term that includes, for example, placing an infant to sleep in a crib in the same room as the parents. "Co-sleeping" also includes bedsharing by definition. However, bedsharing is a specific form of co-sleeping exclusive from any other co-sleeping arrangement. For example, bedsharing neither describes nor includes co-sleeping on a couch, which is nearly universally considered an unsafe practice. It is important that health care providers recognize the variety of sleep practices, the pros and cons of each, and the necessity of providing parents with information about how best to protect and nurture their baby. Most parents engage in a continuum of practices, whether they acknowledge it or not, and whether the infant is breastfeeding or is medically fragile, it may be even more important to recognize the importance of co-sleeping to that family. The purpose of this article is to encourage health care providers to become aware of the continuum of infant sleeping arrangements and to recognize when and how those arrangements are best implemented. Mothers are co-sleeping with infants in increasing numbers (McKenna & McDade, 2005), co-sleeping may prove to be the most beneficial sleeping arrangement for infant health, and health care providers must be prepared to offer advice and education that is medically accurate and appropriate to individual situations.

Groups who support the historic, biologically evolved context of infant sleep, namely bedsharing while breastfeeding, feel strongly that babies should sleep in close, protective proximity to the mother (Elias, Nicolson, Bora, & Johnston, 1986; Konner, 1981; McKenna, Mosko, Dungy, & McAninch, 1991). Sleeping with the mother maximizes breastfeeding opportunities (Mikiel-Kostyra, Mazur, & Wojdan-Godek, 2005) and physiological regulation of immature respiratory, cardiac, and neurologic systems throughout the night (Bergman, 2005; Fransson, Karlsson, & Nilsson, 2005; Goto et al., 1999; McKenna, 2000; McKenna et al., 1994). It also provides skin-to-skin contact, which contributes to the growth and development of infants and has been found especially to support premature and medically fragile infants (Charpak et al., 2005; Dodd, 2005;

Ferber, Makhoul, & Weller, 2006; Gribble, 2005). The stimulation of skin-to-skin contact, including arousals and increased heart rates, promotes growth and positively correlates with insulin secretion and weight gain in premature infants (Ferber et al.). The majority of the world's infants sleep with their mothers and breastfeed.

Other groups advocate placing an infant alone in a crib where it cannot be smothered by adult blankets and pillows or the mother's or father's body. When bedsharing is practiced unsafely, crib sleeping offers a safer alternative (Vemulapalli, Grady, & Kemp, 2004). However, most infant mortalities during sleep occur when a parent leaves an infant to sleep alone, outside the sensory contact of a parent or responsible and committed adult (Drago & Dannenberg, 1999). The notion that infants should sleep as long as possible without night waking, a situation more likely to occur in formula-fed infants sleeping separately from the mother, has arisen coincidentally with the practice of leaving the infant to sleep alone. Certainly, longer periods of infant sleep provide longer periods of uninterrupted sleep for the parents. However, longer and deeper sleep may not be safe for infants, and nutritionally, this is not the best practice. Formula-fed infants are less easily aroused from active sleep compared to breast-fed babies (Horne, Parslow, & Harding, 2004), and infants who sleep through the night are at higher risk for sudden infant death syndrome (SIDS) (Sears, 1999). Chen and Rogan (2004) found that failure to breastfeed places an infant at risk: In the United States, 720 infants die within the first year of life from illnesses or other causes that would have been prevented by breastfeeding. While breastfeeding protects against infectious diseases, it may also confer higher survival rates via factors associated with "physical proximity" (Chen & Rogan, 2004, p.438).

What are some of the other risks associated with crib sleeping, especially when placed in a room separate from the mother? The crib-sleeping infant must be competent to regulate its own body temperature (Tuffnell, Peterson, & Wailoo, 1996), heart rate, and respirations (Barr & Elias, 1998). The infant must also emotionally withstand the trauma of separation from the mother, which some claim involves a conditioning process in which the infant learns to endure longer and longer periods of separation without crying out (Ferber, 1986)—essentially, the infant goes into both despair and hyperarousal (Bergman, Linley, & Fawcus, 2004). Crib-sleeping infants undergo separation and tolerate abandonment from the mother.

It is possible that for some infants the stress of sleeping alone occurs at a time in development when many infants can ill-afford it. Filiano and Kinney (1994) proposed the "triple risk hypothesis" to identify infants at risk for SIDS when the following events simultaneously occur: an underlying inability in homeostatic control, a critical developmental period in state-related homeostatic control, and an exogenous stressor that exacerbates the infant's underlying vulnerability. Co-sleeping may beneficially assist infants at risk for SIDS by supporting homeostatic control.

Proponents of crib sleeping have criticized bedsharing as a dangerous practice, and some have tried to find evidence that bedsharing increases the incidence of SIDS and smothering (smothering is a separate event entirely from SIDS, which to date has no identified etiology). However, new evidence demonstrates that crib sleeping is the more dangerous practice and that co-sleeping (at least sharing the same room with baby, which allows for sensory contact between mother and baby) offers protective benefits from SIDS if the parents do not smoke (American Academy of Pediatrics [AAP], Task Force on SIDS, 2005; Carpenter et al., 2004). Further, there is evidence that breastfeeding, which is facilitated by co-sleeping and bedsharing, is associated with a lower risk of SIDS (AAP, Section on Breastfeeding, 2005; Chen & Rogan, 2004).

The Controversy

In October 2005, the AAP published a paper in the journal, *Pediatrics,* suggesting that time with mother in bed increases the likelihood of infant death (AAP, Task Force on SIDS, 2005). However, the data the AAP Task Force on SIDS cited from Blair et al. (1999) do not uniformly support this conclusion. In fact, Blair et al. (1999) actually demonstrate the opposite that "there is no evidence that bedsharing is hazardous for infants of parents who do not smoke." Moreover, data demonstrate that when the mother sleeps in the same room with baby the chance of death from SIDS decreases by 50% (Blair et al., 1999; Carpenter et al., 2004; Mitchell & Thompson, 1995). The AAP Task Force on SIDS (2005) did acknowledge that placing the infant within sensory contact (effectively advocating co-sleeping) with the mother is safer than placing baby in a crib in a separate room.

Many of the risk factors for SIDS and smothering are identifiable—they have been published and remain undisputed. Responsible bedsharing (bedsharing practiced by responsible, sober parents on a safe sleeping surface, following safety guidelines such as those suggested in part in Tables 4 and 5) has not been proven to be one of these risk factors. Well-respected physicians' and advocacy groups have issued statements in opposition to the AAP's statement (statements protesting advocacy of pacifiers at night as a substitute for mother's breast and protesting the unfounded conclusion that bedsharing is uniformly dangerous). Some of these groups include the U.S. Breastfeeding Committee (2005), The Academy of Breastfeeding Medicine (2005a), LaLeche League International (2005), Attachment Parenting International, (2005), and Sears (2005) author of many parenting books.

When direct, fair comparisons have been made between bedsharing and crib sleeping (e.g., statistically adjusting or excluding from the data infant deaths which occurred

under the influence of parents who smoked, drank alcohol, used drugs or somnogenic medications, or used unsafe sleeping surfaces such as couches), crib sleeping is found to be the *least* favorable practice. Additionally, the data show that more women are breastfeeding, more parents are co-sleeping and bedsharing; yet, there are *fewer* deaths from SIDS (Blair et al., 1999; Carpenter et al., 2004; Centers for Disease Control and Prevention, 1996; McKenna & McDade, 2005; Mitchell & Thompson, 1995). These topics warrant further research.

The problem with studies that do show an increase in SIDS related to bedsharing is that they do not uniformly control for unsafe bedsharing practices such as parental alcohol consumption, as in Tappin, Ecob, Stat, and Brooke (2005) who chose not to include alcohol as a factor; smoking (which often occurs with alcohol use) (Carpenter et al., 2004); unsafe sleeping surfaces, overcrowding, and many other factors. These and other *unsafe* forms of bedsharing may be more dangerous than crib sleeping, especially in infants less than 8 to 11 weeks old (Carpenter et al., 2004; McGarvey, McDonnell, Chong, O'Regan, & Matthews, 2003). Health care providers must educate all parents about safe practices versus risk factors so they can make informed decisions. Careful and complete assessment of risk factors that would recomend against bedsharing is essential, as the number of mothers who should not bedshare, depending upon the population, is potentially quite high. To simply admonish parents not to sleep with their infants, ever, under any circumstances, is unrealistic, quite possibly unethical, and does not provide the optimum in nutrition and sleep physiology for infants. Warning mothers uniformly not to sleep with their infants places both the mother and the infant at risk for sleep loss, breastfeeding problems, separation-related issues and trauma for mother and child (Anderson, Moore, Hepworth, & Bergman, 2005; Ball, 2003), and increased stress.

Admonishing parents not to sleep with infants is unrealistic, quite possibly unethical, and does not provide the optimum in infant nutrition and sleep physiology.

Women in western societies have begun to breastfeed more often (undisputedly the best nutrition for infants in almost all cases) and to bed share as a natural consequence of breastfeeding. The reality is that the majority of mothers are breastfeeding their infants for some period of time (69.5% of mothers at hospital discharge) (Ryan, Wenjun, & Acosta, 2002). Most breastfeeding mothers will sleep with their infants at least one time, and many co-sleep regularly (Ball, Hooker, & Kelly, 1999; Lahr, Rosenberg, & Lapidus, 2005; McCoy et al., 2004). In one study, as many as 76.6% mothers bedshared some of the time and 35.2% did so frequently (Lahr et al.). Research on breastfeeding mothers demonstrates that breastfeeding mothers sleep with their infants differently and more safely than bottle-feeding mothers because a breastfeeding mother places baby under her arm and on baby's back, and the mother tucks her knees to envelope the infant (Ball, 2003). On the other hand, bedsharing may not always be a personal choice but rather due to the fact that impoverished families may not have access to safe cribs (Vemalapulli et al., 2004).

It is not factually correct for health care providers to tell *all parents* that bedsharing and sleeping with an infant is always dangerous and will increasingly threaten the infant with death every hour that they sleep. It is more helpful and evidence based to carefully consider the client, her habits, lifestyle, and health status and then discuss the safest options for her infant. If she smoked during pregnancy, smokes at present, uses alcohol, or uses benzodiazepines, for example, the authors would advocate that she place her infant to sleep in a crib, given the risk factors involved. If a mother is healthy, responsible, has no risk factors, and is breastfeeding, she requires the knowledge to practice either safe bedsharing or co-sleeping, including information regarding safe sleeping surfaces, safe covers, and a nonsmoking environment. These and other guidelines are listed in Table 1. The parental behavior of smoking emerges as one of the strongest risk factors for SIDS—smoking during pregnancy and smoking while bedsharing (Carpenter et al., 2004; Lahr et al., 2005). Alcohol use and unsafe surfaces are also emerging as strong risk factors for smothering (Blair et al., 1999; Carpenter et al., 2004; Carroll-Pankhurst, & Mortimer, 2001; Fleming et al., 1996; Hauck et al., 2003; Kemp et al., 2000). These and other risk factors are listed in Tables 2 and 3.

Where is the middle ground in this debate, and what principles should guide practice? As in most controversies, some value is found in both sides of the argument. One must weigh the relative risks and benefits and provide evidence-based information to fit the individual needs and complex social, economic, and cultural context of the family. In this debate, many think that infant lives are at stake; therefore, some might err on the side of caution. It is obviously better to save as many infant lives as possible by reducing risk exposure. But what really constitutes risk and exposure in this debate? So far, the data demonstrate that crib sleeping may be the most dangerous practice of all, but this thwarts what we have been told for more than a decade and confronts recently evolved cultural norms

TABLE 1
Guidelines for Safe Bedsharing (Academy of Breastfeeding Medicine, 2005b)

Breastfeed your baby exclusively for 6 months
Place the baby next to the mother and not between parents
Place the baby on his back when sleeping
Take precautions to prevent baby from rolling out of bed
Use the largest adult bed you can afford, such as a king sized mattress
Make sure that there are no spaces between mattress, head board, walls, or rail slats in which baby's head can be entrapped
Use a thin blanket, not a heavy quilt or duvet in the parents' bed, and adjust the room temperature for comfort

about where an infant should sleep. New evidence challenges health care providers to reconsider what they tell parents and to integrate evidence-based information into clinical practice.

Crib sleeping may be the most dangerous practice of all, but this thwarts and confronts recently evolved cultural norms about where an infant should sleep.

Safe sleeping can be practiced in a variety of environments and conditions. Health care providers should advocate safe guidelines for infants and parents—guidelines that can be applied whether the infant will be placed in a crib or next to an adult. It is interesting to note that in its position paper on breastfeeding, the AAP Section on Breastfeeding advocates that "mother and infant should sleep in proximity to each other to facilitate breastfeeding" (AAP Section on Breastfeeding, 2005) and that in early infancy "mothers should be encouraged to have 8 to 12 feedings at the breast every 24 hours, offering the breast whenever the infant shows early signs of hunger such as increased alertness, physical activity, mouthing, or rooting" (AAP Section on Breastfeeding). How can a breastfeeding mother remain in close proximity to her infant and feed every 2 to 3 hours in a 24-hour period without suffering exhaustion from multiple night wakings? The obvious solution that more families are practicing is co-sleeping in the same room or bedsharing with baby. It is virtually impossible to breastfeed and to sleep without co-sleeping in some form (Ball et al., 1999; Clements et al., 1997; Elias et al., 1986; Ford et al., 1994; Hooker, Ball, & Kelly, 2000; Rigda, McMillen, & Buckley, 2000). Also, mothers who bedshare while breastfeeding sleep better (Quillin & Glenn, 2004).

Bedsharing supports infant nutrition and physiology when practiced by a sober, responsible mother; crib sleeping is the alternative rather than the first choice.

The most current data support co-sleeping as the safest option when it is practiced in a safe and responsible manner by a sober, nonsmoking, and preferably breastfeeding mother on a safe surface. A similar statement, based on the most recent data, could be made for crib sleeping, that crib sleeping, when practiced in a safe, nurturant and responsible manner, provides a viable alternative to bedsharing when the parents are either unable or unwilling to safely bed share or co-sleep with an infant. Not all parents can afford a crib. Not all parents can breastfeed or enjoy the "family bed." Guidelines will, of necessity, be more complex than simply saying, "place in

TABLE 2
Risk Factors for Bedsharing (from Academy of Breastfeeding Medicine, 2005b; Sears, 2005)

Risks from bedpartners
Parental or environmental smoke exposure
Alcohol or use of drugs or medications (e.g., tranquilizers, antihistamines, sleeping pills) that could decrease sensitivity to baby
Exhaustion or sleep deprivation, or both
Baby-sitters or nonparents and siblings: They are not as aware as a parent
Older siblings sharing the bed contraindicated if the baby is younger than 9 months
Risks from unsafe surfaces
Cushiony or soft surfaces: Safe sleeping must occur on a firm surface
Unsafe surfaces: couches, soft, moving waterbeds
Pillows adjacent to or near infant
Overheating

TABLE 3
Risk Factors for Infants Sleeping in Cribs

Placing baby in another room
Poorly designed older cribs which can entrap baby
Using an unrepaired, recalled crib
Some playpens and port-a-cribs are unsafe for all night sleeping
Prone sleeping unless medically indicated
Placing pads around the crib
Exposure due to cold or heat
Baby is less able to regulate physiology without proximity to mother's body: (potential problems could occur with temperature, respirations, lack of awakenings, and irregular heart beat)
Emotional stress and anxiety of separation
Mobiles
Positioning devices
Stuffed animals
Pets free in the room
Lead paint potential in old cribs

crib for safe sleeping." Health care providers can provide parents with guidelines such as placing baby to sleep on his/her back, using a firm mattress, using a light blanket or no blanket, breastfeeding as the best nutritive and bed-sharing environment, no pillows, no stuffed animals, no couches. These and other considerations are listed in Tables 1, 2, and 3.

Conclusions

Nurses and other health care providers are in the position of influencing the sleep behavior of parents and infants. All health care professionals will agree on safety, nurturance, and sufficient rest as ideal factors for infant sleep. While the optimal situation emerging in the literature points toward a responsible, safe, breastfeeding mother who shares her bed or at least her room with her infant, this article has outlined safe sleeping conditions and some risk factors found in a variety of sleeping environments. Neither bed-sharing nor crib sleeping can be recommended in all cases and risk factors must be taken into account. These safe sleeping practices may be used in patient education and ought to be adapted to the inpatient setting as well. An excellent resource has been published by UNICEF U.K. Baby Friendly Initiative with the Foundation for the Study of Infants (2005) in conjunction with the U.K.'s Baby Friendly Initiative entitled "Sharing a Bed with Your Baby: A Guide for Breastfeeding Mothers." It includes safe practice guidelines, contraindications, and a diagram of a breastfeeding mother sleeping safely with her infant and is available on the World Wide Web (UNICEF U.K. Baby Friendly Initiative with the Foundation for the Study of Infants).

TABLE 4
Online Guidelines and Resources for Bedsharing and Co-Sleeping

Academy of Breastfeeding Medicine (http://www.bfmed.org). "*Prototcol #6: Guideline on Co-Sleeping and Breastfeeding,*" "http://www.bfmed.org/ace-files/protocol/cosleeping.pdf
Aetna Intelihealth, reviewed by faculty of Harvard Medical School. "*Sleep Safety for Infants*," http://www.intelihealth.com/IH/ihtIH/WSIHW000/29010/29454/331779.html%3Fd = dmtChildGuide
AskDrSears.com. "*Sleeping Safely with Your Baby*," http://www.askdrsears.com/html/10/t102200.asp
Attachment Parenting International. "*Making It Work: Guidelines for Safe Co-Sleeping*," http://www.attachmentparenting.org/cosleepwork.shtml
Drgreene.com. "*SIDS, The Family Bed, & the U.S. Consumer Products Safety Commission*," http://www.drgreene.org/body.cfm%3Fid = 21&action = detail&ref = 953
Kellymom Breastfeeding & Parenting. "*The Family Bed*," http://www.kellymom.com/parenting/sleep/familybed.htm
Mothering Magazine. "*Sleep Environment Safety Checklist*," http://www.mothering.com/articles/new_baby/sleep/safety-checklist.html
Natural Family. "*Is Sleeping with My Baby Safe? Can It Reduce Risk of SIDS?*," http://www.naturalchild.com/james_mckenna/sleeping_safe.html
Natural Family. "*Tools You Can Use: Checklist for Safe Cosleeping*," http://www.naturalfamilyonline.com/5-ap/312-co-sleeping-safety.htm
Parenthood.com. "*Guidelines for Safe Sleeping (and Co-Sleeping)*," http://www.parenthood.com/articles.html%3Farticle_id = 6612
Royal College of Midwives. "*Bed Sharing and Co-sleeping*," http://www.rcm.org.uk/info/docs/GP1-Bed-sharing.doc
The Mother-Baby Behavioral Sleep Laboratory at the University of Notre Dame. "*Guidelines to Sleeping Safe with Infants*," http://www.nd.edu/%7Ejmckenn1/lab/faq.html

TABLE 5
Online Guidelines and Resources for Crib sleeping

Drgreene.com. "*Safe Bedding to Help Prevent SIDS,*" http://www.drgreene.com/21_171.html_

Consumer Product Safety Commission. "*Consumer Produce Safety Alert: Soft Bedding May Be Hazardous to Babies*," http://www.cpsc.gov/CPSCPUB/PUBS/softbed1.pdf

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Katherine H. Morgan, RN, MS, MSN, is a family nurse practitioner at University of Tennessee College of Nursing, Knoxville, TN.

Maureen W. Groer, RN, PhD, FAAN, is Gordon Keller Professor at University of South Florida College of Nursing, Tampa.

Linda J. Smith, BSE, FACCE, IBCLC, is at Bright Future Lactation Resource Centre Ltd, Dayton, OH.

Address for correspondence: Maureen W. Groer, RN, PhD, FAAN, University of South Florida College of Nursing, 12901 Bruce B. Downs Boulevard, Tampa, FL 33612. E-mail: mgroer@health.usf.edu