SIDS

Risks and Realities

A Response to Recent Findings on Bedsharing and SIDS Risk

SARAH OCKWELL-SMITH, BABYCALMING.COM **PROFESSOR WENDY MIDDLEMISS,** UNIVERSITY OF NORTH TEXAS **TRACY CASSELS,** UNIVERSITY OF BRITISH COLUMBIA, EVOLUTIONARYPARENTING.COM **HELEN STEVENS,** SAFE SLEEP SPACE **PROFESSOR DARCIA NARVAEZ,** UNIVERSITY OF NOTRE DAME

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SIDS: Risks and Realities

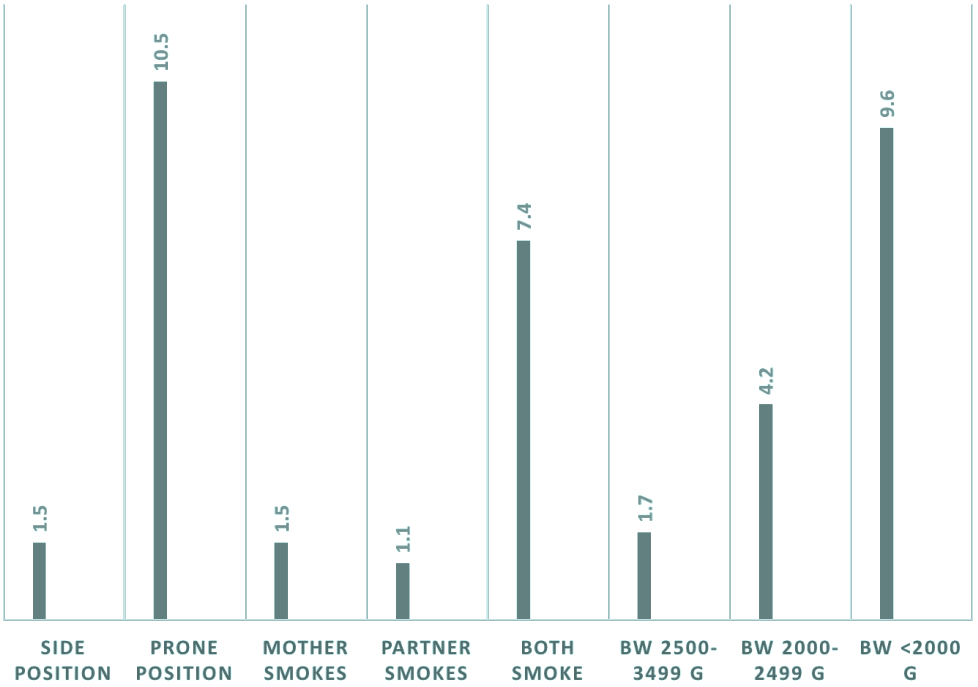
A recent meta-analysis by Carpenter et al. (2013) examined the risk factors for Sudden Infant Death Syndrome (SIDS). While we commend Carpenter et al. for examining risks associated with incidence of SIDS, we question their conclusions and consider them unsubstantiated. Their analysis used faulty and missing data, and they did not account for confounding criteria used to define bedsharing and risks—a challenge in any meta-analysis.

Carpenter et al. examined some of the most salient risk factors for SIDS events—infant sleep position, parental cigarette smoking, infant birthweight, and age. These risks have been well-documented as increasing risk of SIDS events. Thus, it is not surprising or informative to note that these factors remain risks in a re-evaluation of these findings.

While the risks examined do contribute significantly to increasing possibility of SIDS (see Chart 1 below), so do other factors, such as bedding and temperature (see Box below for lists of risks not considered). Without consideration of these risks, it is not possible to determine that one variable, such as bedsharing itself, is *inherently* responsible for risk remaining in this study. Nor is it possible to say that one of the variables within the nighttime care routine, such as breastfeeding, is not protective.

CHART 1

Adjusted Odds Ratios from Carpenter et al. (2013)



Major Limitations

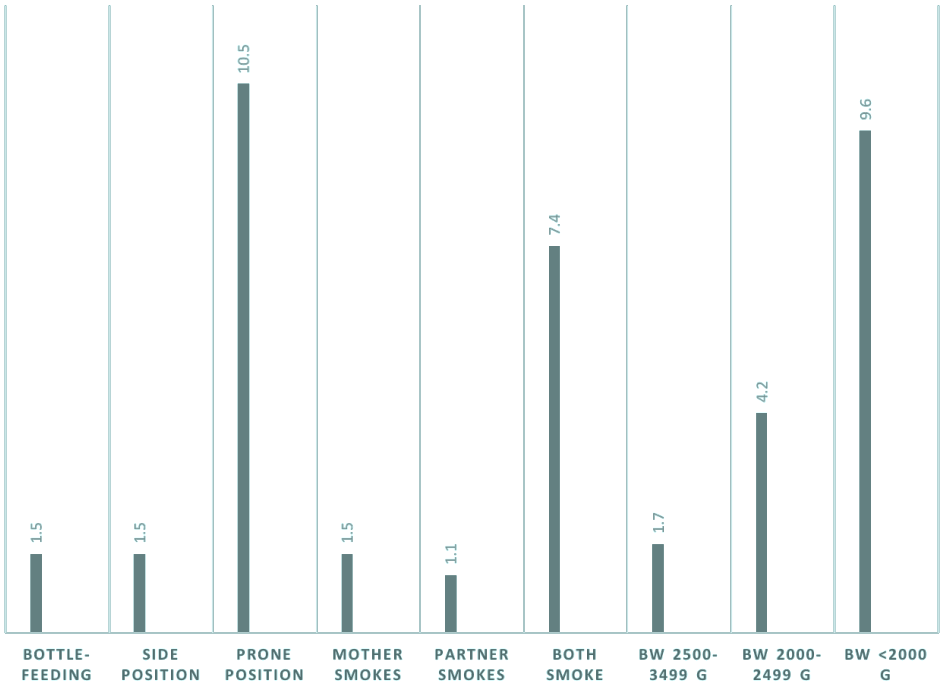
In addition to these major limitations in making broad, sweeping statements about risk based on this meta-analysis, there are two additional issues that are of significant concern in the paper as a whole. We address these herein.

Treatment of Breastfeeding

The first is the treatment of breastfeeding. Buried deep in the last section of the paper is the recommendation that breastfeeding be supported as a mechanism for protecting infant health, the construction of the hypotheses explored here leads to a very different framework. In attempting to examine whether breastfeeding is protective against risk of SIDS when parents bedshare seems to jumble the role of breastfeeding in a manner that undermines one of the stated objectives of the authors: to address health costs associated with early infant care by reducing SIDS events. Further, the authors seem to overlook the AOR for bottle-feeding and SIDS risk (see Chart 2).

CHART 2

Adjusted Odds Ratios including bottlefeeding from Carpenter et al. (2013)



NOTE: *BW = Birthweight*

In examining the role of breastfeeding, the authors seem to overlook one essential aspect of infant development—breastfeeding contributes positively to both immediate and later infant health outcomes, not just a reduction in SIDS, though it serves as a protective factor there as well (Alm et al., 2002; Ford et al., 1993; Horne et al., 2004; McVea et al., 2000; Mitchell et al., 1992; Mosko et al., 1997; Scragg et al., 1993). Thus, important in consideration from any perspective is to encourage mothers' breastfeeding through the infant's first year of life. However, the authors seem to couch this protective factor in the arena of risk, thus confusing the message for practitioners and parents.

Instead of looking at how each of the variables in the dataset can contribute to risk of infants' breathing or compromise arousal—the authors focus on whether the act of breastfeeding **protects against all risk of SIDS**. Clearly, that is a standard that cannot be reached. We can, however, easily answer whether breastfeeding protects against SIDS regardless of parental behavior without the necessity of meta-analyses, the imputing of data from 5 of 12 variables, the compromising operational definitions of nighttime care contexts. The answer is simple, though not informative. Yes, there is still a risk. Why? Because there are multiple risk factors that compromise infants' capacity to breathe and infants' ability to arouse. Breastfeeding does not vaccinate against all risks (e.g., a pillow in the face).

The authors give lip service to breastfeeding, but suggest that any claim that bedsharing helps breastfeeding is ill-advised. The use of the Netherlands as a key example of how lowering bedsharing but increasing breastfeeding rates fails to make their point given the relatively low rates and low increases over the 10-year period discussed (a rise of 7% and 8% of any breastfeeding at 3 and 6 months, respectively). It is unclear if the strong anti-bedsharing campaign inhibited greater growth in breastfeeding, something that should be of concern when examining the costs associated with infant health. In the U.S. alone, a cost-analysis found that if we could get 80% mothers to breastfeed exclusively for six months (the WHO recommendations), the U.S. would save $10.5 billion a year in health-related costs (Bartick & Reinhold, 2009).

Furthermore, it is misguided and dangerous to argue that if bedsharing were recognized as a means of supporting breastfeeding that we would see more SIDS events. Even more dangerous is to abandon support of breastfeeding in favor of supporting breastfeeding if it detoured bedsharing. Although the AOR in the current meta-analysis suggests that bottle-feeding is a lower risk factor than bed-sharing (the validity of which will be discussed below), it only concerns itself with SIDS events, not the more general protective benefits of breastfeeding on infant health. As previously mentioned, breastfeeding confers many health benefits, both immediate and long-term, to children (Horta et al., 2007; Ip et al., 2007; Martin et al., 2005; Owen et al., 2002). To only consider SIDS events ignores the effects of lower breastfeeding rates on myriad other diseases.

Risk Factors Not Included in the Analysis

The second issue pertains to the risk factors included and not included in the analysis. The authors have thankfully confirmed some of the major risk factors associated with SIDS, both independently and when interacting with sleep location, such as sleep position, parent smoking, alcohol use, drug use, birthweight, and infant age. The authors solidified many risks, as they were stated individually in the reports associated with each large data set. With this, researchers, practitioners, and parents now have a clear documentation of these specific risks. They clearly confirmed the known risks and quantification of those risks. For example, maternal smoking remains to be one of the most salient risks associated with SIDS—with paternal smoking contributing to risk as well. Similarly, infant sleep position (i.e., prone and side sleep), contribute significant risk of SIDS events.

Missing from the analysis are other known risk factors that are recognized as part of the triple-risk model: critical developmental period (infant age), environmental context (bedding), or infant vulnerability (prematurity). Additionally, the authors fail to include data sets that do examine these risk factors and that come to very different conclusions about the inherent risk of bedsharing on SIDS events (e.g., Blabey & Gessner, 2009). The authors argue that bedsharing is causally related to SIDS events via theories about infant breathing and arousability. Specifically, the authors state that *"[t]he proposition that bedsharing is causally related to SIDS is coherent with theories that respiratory obstruction, re-breathing expired gases, and thermal stress (or overheating), which may also give rise to the release of lethal toxins, are all mechanisms leading to SIDS, in the absence of smoking, alcohol or drugs. Infants placed prone are exposed to similar hazards."*

Is the implication in the press release for this article verifiable? Are breastfed, bedsharing babies at *inherent* risk of SIDS events? The answer is equally as simple, but much more informative: no.

Again, factors that put infants' breathing and arousability at risk also increase the risk of SIDS events. The elements of the sleep context that place infants' breathing and arousability at risk are well defined:

- Respiratory obstruction (e.g., bedding)
- Rebreathing expired gases (i.e., from cover on face)
- Thermal stress through overheating (e.g., too many covers)
- Physiological vulnerability of arousal (e.g., deep sleep from formula usage)

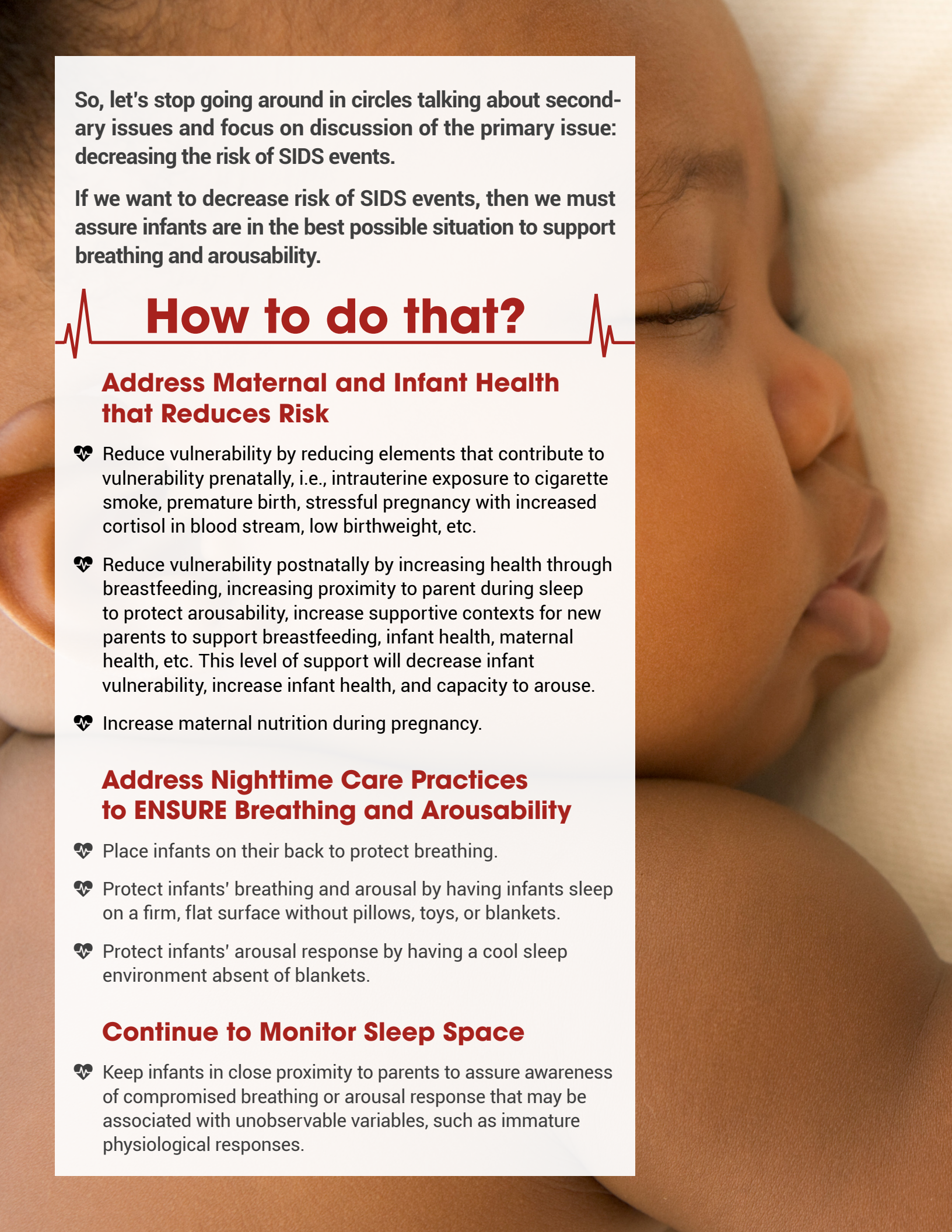
These authors seem to be arguing that parenting behavior that can be associated with risk, even if the source of risk in not the behavior, should be stopped (i.e., bedsharing). This is problematic, given that bedsharing is a universal, evolved practice, and is often preferred by parents. In fact, the absence of bedsharing does not eliminate risk of SIDS events. The diminishing of bedsharing, however, is associated with decreases in other behaviors shown to provide protection against SIDS events, such as breastfeeding.

Certainly, without question, a nighttime care context that includes bedsharing and breastfeeding can include elements that compromise infants' breathing and ability to arouse. Importantly, we know that breastfeeding not only does not contribute to the risk, but serves to help reduce these risks. See Table 1, whereby bottlefed infants are at a greater risk of SIDS, even regardless of sleep location.

What of Bedsharing?

The authors would have us believe bedsharing *per se* increases the risk of compromising infant breathing and arousability. However, they fail to acknowledge or discuss the fact that there are other factors that influence breathing and arousability, such as bedding, temperature, and premature status (which is correlated with birthweight, but carries with it unique risk factors that must be considered).

Data from Alaska between 1993 and 2004 examined the same question of bedsharing risk, only they also included other known risk factors, such as sleep surface (not just sofas, but the type of bed) and sleeping with a non-caregiver, and compared the data not just to controls (Blabey & Gessner, 2009). Additionally, the comparison group was taken from a state-wide monitoring system that does not focus on answering one day of bedsharing habits, but rather, asks parents about usual bedsharing habits. As such, they most likely had more accurate information on bedsharing than the studies included in the current review. What was found in Alaska? Of the SIDS events that took place while bedsharing, 99% included *at least* one risk factor, and thus, the authors conclude that *"infant bedsharing in the absence of other risk factors is not inherently dangerous."*



So, let's stop going around in circles talking about secondary issues and focus on discussion of the primary issue: decreasing the risk of SIDS events.

If we want to decrease risk of SIDS events, then we must assure infants are in the best possible situation to support breathing and arousability.

How to do that?

Address Maternal and Infant Health that Reduces Risk

- Reduce vulnerability by reducing elements that contribute to vulnerability prenatally, i.e., intrauterine exposure to cigarette smoke, premature birth, stressful pregnancy with increased cortisol in blood stream, low birthweight, etc.
- Reduce vulnerability postnatally by increasing health through breastfeeding, increasing proximity to parent during sleep to protect arousability, increase supportive contexts for new parents to support breastfeeding, infant health, maternal health, etc. This level of support will decrease infant vulnerability, increase infant health, and capacity to arouse.
- Increase maternal nutrition during pregnancy.

Address Nighttime Care Practices to ENSURE Breathing and Arousability

- Place infants on their back to protect breathing.
- Protect infants' breathing and arousal by having infants sleep on a firm, flat surface without pillows, toys, or blankets.
- Protect infants' arousal response by having a cool sleep environment absent of blankets.

Continue to Monitor Sleep Space

- Keep infants in close proximity to parents to assure awareness of compromised breathing or arousal response that may be associated with unobservable variables, such as immature physiological responses.

Despite a long history of efforts to reduce bedsharing, this nighttime-care practice remains to be the preferred practice for many is increasing in some areas, and provides many protective or health-benefiting outcomes for mothers and infants. Infants' safety at night is compromised when discussions shift from the criteria above to admonitions to sleep separately. A focus on protection and a discussion of what underlies risk will be much more successful in reducing risk of SIDS, as well as improving the health context postnatally.

TABLE 1

Ten Important Risk Factors That Are Not Included in Carpenter et al. (2013)

1	The researchers importantly did not consider whether the bedsharing was planned. Previous research from Venneman (2009) showed no increased risk in planned bedsharing (versus unplanned). This is an incredibly important omission.
2	The paper did not consider the effects of the mother smoking during pregnancy, only smoking post birth.
3	Breastfeeding information is too limited to draw conclusions. No difference has been drawn between frequency and percentage of breastfeeds versus formula feeds for those 'partially feeding.'
4	The paper only considered 'illegal drug use.' Many postnatal mothers (0-12weeks after the birth) are prescribed analgesic medication for related birth-induced injuries including, but not limited to, Caesarean healing, known to have a sedative effect. This was not considered at all.
5	Prematurity was not considered at all.
6	Parental exhaustion was not considered at all. Some experts suggest this is considered to be less than 4-5 hours of sleep in the past 24-hour period, other experts advise parents to use their instincts. Parental exhaustion naturally impacts on responsive to infant cues.
7	The researchers did not examine the effect of maternal (and paternal) obesity.
8	No differentiation was made between having one or both parents in the bed and more importantly, the location of the baby. It is advisable that the mother sleeps in between the father and infant. Equally, it was not noted if older siblings were also present in the bed.
9	The researchers did not fully consider the impact of alcohol consumption by the father when bedsharing.
10	No mention was made of whether parents were aware of the risks of bedsharing and how to minimize these before sharing a bed with their infant.

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