

The effects on infants of social sleep: co-bedding twins, and bed-sharing families



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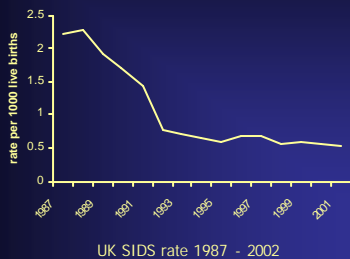
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Although formally recognised as a medical entity in 1970, the causes of Sudden Infant Death Syndrome (SIDS, cot death, crib death) remain elusive – however the rates of SIDS are declining to unprecedented levels worldwide.



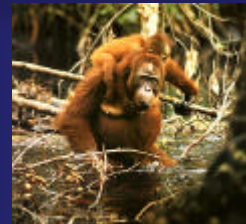
The breakthrough came not from a pharmacological or clinical intervention – but via a change in child care practices – specifically the avoidance of the prone position for infant sleep.



This discovery marked the beginning of an important paradigm shift that has focussed the attention of SIDS researchers worldwide upon the environmental influences and circumstances under which SIDS deaths occur.

Might other child care practices also be important?

Along with a handful of other researchers worldwide, my research team studies infant care practices from the standpoint of the human infant's evolutionary legacy.



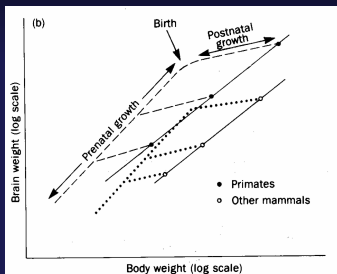
It is the application of this legacy to contemporary western infant care practices, particularly those surrounding sleeping environments, that frame this talk – my focus being the implications for infants of physical contact during sleep.

Though medical therapies and health care guidelines (in most cases) are constructed from the data of biology, medicine in general pays little attention to evolution, despite this being the single most important concept in biology (Brown 1993).

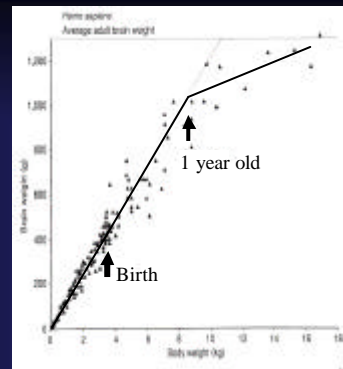
Using an evolutionarily-informed viewpoint in this talk I argue that social sleeping is a normal, widespread, appropriate night-time infant care giving behaviour, illustrating this with examples of co-bedding twin infants, and bed-sharing parents and infants, and discussing infant safety in social sleeping contexts.

What's evolution got to do with it?

At birth human infants are the most neurologically immature of any primate, with the slowest neurological developmental trajectory.



Evolutionary anthropologists consider that for a primate of our brain size we should have a gestational length of up to 21 months.



The evolutionary obstetrical conflict

- Human infants are born in a neurologically underdeveloped state because of the evolutionary conflict between the two defining characteristics of our species – bipedalism and encephalisation.
- Selection pressure for bipedalism 5+ million years ago resulted in a constrained birth canal
- Selection pressure for encephalisation 2+ million years ago resulted in a brain size that is quadruple that of our early hominid ancestors.
- Cranio-pelvic disproportion was circumvented by a truncated gestation followed by a period of total caregiver dependency (an 'external gestation') when the infant is completely dependent upon its mother to regulate its physiology and behaviour, while it invests its energy in a foetal trajectory of brain growth for the 1st year of life.

For the majority of our evolutionary history, therefore, human infants simply would not have survived without the constant contact of a caregiver. Bowlby described attachment between mother and infant as a long-ago-evolved system, a product of our hominid past that he christened the 'environment of evolutionary adaptation'.



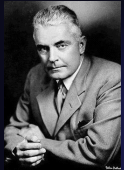
Bowlby's ideas on bonding were distinctly evolutionary.

Among the best studied hunter-gatherer group the !Kung San (often used as a model of the lifestyle of our early ancestors) young infants are in physical contact, not just proximity, with someone (usually the mother) for at least 90% of the time during the 1st few months of life. Infants and young children sleep on a mat beside their mother, with the father nearby, until they are weaned at age 3 or 4.



Biologically appropriate infant care

- ❖ Physical contact between mother and infant is part of our primate heritage, an essential component and fundamental feature of human nature.
- ❖ Because of its exceptional neurological immaturity the human infant is forced to rely on a significant amount of external regulation and support.
- ❖ The importance of physical contact as an external regulating agent is now well recognised for supporting infant development. The infant's most fundamental physiology such as heart rate, body temperature, breathing, sleep and arousal are influenced by contact with the caregiver.
- ❖ Half a century ago, however, leading psychologists scoffed at the idea that affection and physical contact were vital to an infant's development.



John B Watson's behaviourist philosophies of child rearing (popular in the 1920s) were in direct response to the child-centred turn-of-the-century world. Love and affection were unnecessary emotions in infant development, parents were urged to avoid stroking, rocking and kissing their babies. Watson felt that a child could not have too little affection.



Sir Frederick Truby King, supporter of rigorously scheduled feeding and sleeping, also advocated sleeping babies out of doors, and encouraging them to entertain themselves for many hours a day. A 'good' Truby King baby preferred solitary confinement to human interaction.

Physical comfort is of primary importance

Fashions in infant care change much more rapidly than infant evolutionary biology.

Harlow's traumatic yet insightful experiments into the social development of infant monkeys proved beyond a shadow of a doubt that physical contact providing warmth and comfort was of vital importance for infants.



Contact is important for normal social behaviour

But an inanimate surrogate mother was not sufficient for normal social development.

Harlow and his team discovered that physical and social contact with other individuals (mothers or peers) was vital to individual mental health and development.



And we also now know that physical contact (Kangaroo care) helps stabilise the physiology of premature infants, enhances development, and promotes maternal confidence....



<http://kangaroomothercare.com>

Importance of physical contact for infants

- ❖ Physical contact, then, acts as an external regulating agent in stabilising infant physiology and supporting infant development
 - soothes and calms infants promoting sleep
 - skin to skin contact is analgesic for newborns
 - separation is physiologically stressful
 - infants experience less agitation, apnoea, and bradycardia and more stable SatO₂
 - less maternal anxiety and more efficient participation in caring for their newborn infants.

One arena where the importance of physical contact and social sleep has been recognised has been in the transition to extra-utero life for premature twin infants – especially in situations where one twin is weaker than the other.



Nyqvist & Lutes (1998) argue that twins have the capacity to support one another via co-regulation because of their common intrauterine experiences.

Observations provided evidence that the neonates moved closer together, touched, held, hugged, rooted and sucked one another. They smiled at each other, were awake at the same time, and experienced a reduced need for ambient temperature support (Nyqvist & Lutes 1998, Lutes 1996, Bingham 1997).

Such co-regulatory effects of twin infants upon one another might be expected given the synchronous behaviour and physiological patterns identified between foetuses in twin gestations

(e.g. Gallagher et al. 1992).



Co-bedding twins study

- ❖ Our recent study of twin infant sleeping arrangements (funded by FSID) was conducted, in part, as a response to queries from many parents of twins who subjectively felt that after 9 months together their infants should not be separated from physical contact with one another after birth.
- ❖ They also felt that their infants settled better and 'preferred' to sleep in physical contact with one another.
- ❖ However concern was expressed as to whether it is safe for twin infants to sleep together in the same cot – would they disturb each other, or overheat? And how could one apply the feet-to-foot guidelines in a co-bedded situation?

Part 1: sleep logs and interviews in 1st & 3rd months to ascertain sleeping arrangements and parental reasons.

Part 2: in-home video observations of co-bedded infants to explore implications of different configurations.

Part 3: 2-condition trial in lab to behaviourally and physiologically monitor twin infants sleeping together and apart.

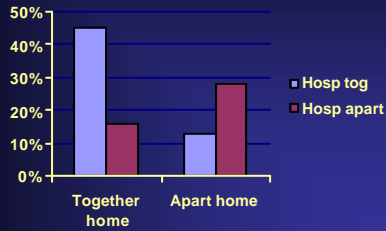


Sleeping arrangements

Of the 70 families that took part in the study, 60% of twin pairs were co-bedded, and 40% slept apart in 1st month

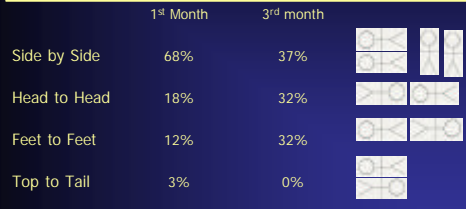
Parents' reasons for sleeping twins apart		Parents' reasons for co-bedding twins	
Prevent disturbance	23%	Infant's preference/settling	55%
Parental preference	14%	Synchrony of feeding/waking	14%
Infant preference	14%	Parental preference	11%
Suffocation/overheating	14%	Advice from others	11%
Copied hospital	14%	Copied hospital	3%
Cot death fears	9%	Easier for single caregiver	3%

Home sleeping arrangements were significantly associated with those employed on post-natal ward



1st month ($\chi^2=9.5$, $df=1$, $p=0.002$)

In the 1st month, co-bedded twin infants predominantly slept side-by-side, however by the 3rd month, those still co-bedded were positioned side-by-side, head-to-head, and feet-to-feet in equal proportions

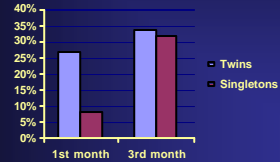


Most parents who co-bedded their twins followed 'feet-to-foot' advice by sleeping their infants side-by-side at the foot of the cot. Some parents slept their infants side-by-side diagonally, or horizontally across the cot, which presents potential problems with bed-covers.



Proximity to parents

- most infants who were moved out of their parents' rooms were sleeping apart at 1 month. Only 2 twin pairs who were co-bedded in their parent's room at 1-month were sleeping apart in a separate room at 3 months.
- twin infants at 1 month of age were over 3x more likely to sleep in a separate room from their parents than singleton infants of the same age (FSID project 227).



So a beneficial effect of co-bedding twins is that they are kept in the parental room for longer.

Disturbance

Sleep lab observations revealed no overall difference in the proportion of night-time spent awake whether sleeping together or apart.

Average amount of sleep reported on sleep logs:

	Together	Apart	Sig
1 st month	8:00 hrs	8:11 hrs	ns
3 rd month	9:17 hrs	10:18 hrs	$p=0.008$



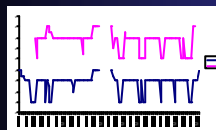
Those pairs who routinely slept together spent more time awake on the separate night.

Synchrony

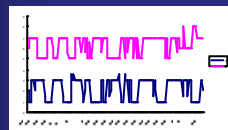
Co-bedding configuration did not affect sleep duration, but did affect sleep state synchrony. Co-bedded infants sleeping in the closest proximity (e.g. side-by-side) exhibited greater sleep state synchrony than those sleeping at opposite ends of the cot.



Side by side



Head to head



Co-bedded twins did not overheat

- No consistent difference in temperature patterns for sleeping together and sleeping apart.
- Those infants that spent the greatest proportion (70%) of the co-bedded night physically touching one another exhibited overlapping temperature profiles on the co-bedded night and the separate night.
- Neither the nadir of the sleep-onset temperature fall, nor the peak temp during REM and Quiet sleep differed between the two sleeping conditions:

	Together	Apart	Sig
Median nadir	36.8°C	36.8°C	p=0.658
Median peak REM	37.4°C	37.4°C	p=0.861
Median peak QS	37.3°C	37.2°C	p=0.725

Effects of social sleep for infant twins

- Sleeping together side-by-side or head-to-head is no more risky for twin infants than sleeping apart (babies didn't overheat, compress each other, or get under one another's covers).
- Guidance on not co-bedding twins in positions that prohibit the securing of bed-covers, or recommending the use of bag-sleepers for co-bedded twins, might be appropriate.
- Co-bedded infants do not disturb one another more often than those sleeping apart.
- Infants sleeping in closest proximity had synchronous arousal patterns – considered preferable by many parents.
- Regarding SIDS prevention, co-bedded twins remained in their parents' room for longer than those who slept apart, although twins generally left the parental room earlier than singletons. Encouraging co-bedding may help parents keep their twins in parental room (saving on space and expense). Hospital practices are also influential in this regard.

Parent-infant bed-sharing

Logically, based on physiological, evolutionary, historical, psychological and cross-cultural evidence, bed-sharing with its mother ought to be in an infant's best interests.

In practice western bed-sharing behaviour has been implicated in both accidental infant deaths and SIDS. While close mother-infant contact at night is evolutionarily and physiologically adaptive, western bedding and sleeping arrangements may not be.

Our research into parent-infant bed-sharing aims to understand the context and behaviour of safe parent-infant sleeping arrangements to ensure that by bed-sharing western parents are promoting infant health and well-being, not putting their infants at risk...

North Tees Night-time Parenting Study

- May 1998 to May 2000 (funded by FSID)
- 253 families with newborn infants completed sleep logs and participated in interviews during infants' 1st and 3rd months
- 30+ bed-sharing families were videotaped in dyadic and triadic sleeping arrangements in their own homes

See:

Ball, HL (2002) "Reasons to share: why parents sleep with their infants". *Journal of Reproductive and Infant Psychology*, 20 (4): 207-221.

Ball, HL (2003) "Breastfeeding, bed-sharing & infant sleep". *Birth*, in press.

Ball, HL (2002) "Bedsharing research in Britain". *Mothering Magazine* Sept/Oct 2002 www.mothering.com/9-0-0/html/9-4-0/bedsharingbritain.shtml

Prevalence of bed-sharing

- ⇒ Sleep log data = conservative estimate of bed-sharing frequency

		Mean age 17 days	Mean age 100 days
Habitual	all night every night	3%	2%
Combination	>1/week all or part night	32%	20%
Occasional	1/week or less	12%	8%
TOTAL	All bed-sharers	47%	30%

- ⇒ 55% (138/253) of infants bed-shared at least occasionally during 1st or 3rd month sleep logs
- ⇒ 70% (176/253) of infants bed-shared at least occasionally during 1st 3 months according to combination of sleep log & interview data

UK bed-sharing prevalence

Conservative estimates indicate that some form of parent-infant bed-sharing is practiced by around 50% of UK families with young babies (Ball & Blair, in prep).

	North Tees Study	CESDI Study
Bed-shared in 1 st month	47.4%	47.9%
Bed-shared in 3 rd month	29.4%	24.2%

Bed-sharing is most prevalent with neonates, and declines as infant age increases.

A greater proportion of breastfed babies bed-share than formula-fed babies (73% vs. 38%).

"One barrier to breastfeeding is the need for a satisfied baby that sleeps through the night and does not feed too frequently" (Marchand & Morrow 1990)

"The mother's need for an uninterrupted night's sleep may be promoting the early cessation of breastfeeding" (Pinilla & Birch 1993)

Our interviews echo these views:

Mother 118: Baby was too demanding and feeding too often. Breastfeeding didn't allow a good night's sleep and I have a toddler as well.

Mother 203: Baby was too demanding – waking too frequently. Baby now sleeps solid 12 hours at night.

Mother 407: Baby was unsettled on the breast and not sleeping. Now (on formula) baby not fed at night.

Mother 412: Breastfeeding was too tiring, wanted Dad to help at night.

Coping with night-feeding

When mums are not prepared to get up & breastfeed:

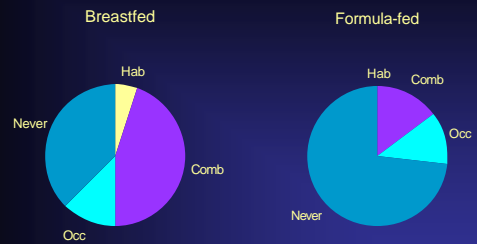
1. Feed the baby formula (or formula plus some 'heavy' indigestible substance) so that it doesn't require frequent (or any) night-feeding.
2. Undertake 'infant-training' programmes involving feeding breastfed babies water in darkened rooms over lengthening intervals to encourage them to lengthen their sleep bouts until they 'sleep through the night' (12:00 - 5:00).
3. Sleep next to the baby, allowing easy access to breasts, and eliminating the need for either mother or baby to wake fully for breastfeeds.



Infant sleep & nocturnal feeding

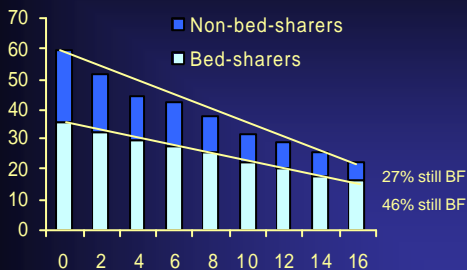
- norms of infant sleep were established when breastfeeding rates were at their lowest (fifties & sixties)
- parents now expect infants to sleep through the night
- this is only characteristic of formula fed infants
- breast milk composition indicates that we are a 'low solute, frequent suckling' species
- like other primates, we are physiologically adapted for frequent suckling involving close mother-infant contact day and night
- hormones released during breastfeeding induce relaxation and sleep in both mother and baby
- all indicate that close sleep contact is an adaptive part of mother-infant nocturnal feeding behaviour

Bed-sharing & infant feeding



$\chi^2 = 26.05$, $df=1$, $p < 0.0001$
1st month sleep log data

Breastfeeding decline over 1st 4 months



bedsharing at 1 month and breastfeeding to 4+ months ($\eta^2=5.45$, $df=1$, $p=0.02$)

Age effects

- Because bed-sharing is primarily related to feeding and frequency of night waking, the more successfully we promote breastfeeding, the more bed-sharing infants there will be.
- As breastfeeding rates decline with infant age, we should expect there to be more younger babies bed-sharing than older babies.
- Bed-sharing is most prevalent among the youngest infants.
- This has implications for what we should expect regarding the profile of cot deaths in parental beds.
- As more and more young infants sleep in parents' beds we should expect more of the youngest SIDS cases will happen in the parents' bed because this is where they sleep.
- Results of the CESDI study found exactly this: SIDS in parental bed = younger than those found elsewhere, and proportion declined as age increased.

Reasons why parents sleep with their baby

- For ease and convenience of breastfeeding
- To comfort and settle the baby / get some sleep
- For enjoyment / to increase time spent with baby
- To ease mother's pain / discomfort after birth
- For baby's security / attachment
- For parent's peace of mind / monitoring
- To attend quickly to ill baby
- Fear of baby dying / dying alone
- Nowhere else for baby to sleep
- Family ideology -- parenting style

Settling an unsettled baby

In families where bed-sharing is irregular and unrelated to breast-feeding, settling a baby who is having trouble sleeping is a prevalent reason for bed-sharing.

Family 467 "Baby appeared to have colic. As we were unsure we rang the doctor who confirmed that this is likely to be the case. Baby slept in parents bed so we could keep an eye on him."

Family 481 "He slept well but his cough kept waking him up a little bit so Granma brought him in her bed to keep an eye on him."

Family 407 "Continually twisted and turned in her sleep. Resolution: cuddled in bed with mum"

Family 243 "quite grizzly - ok when he came in bed with us - so we let him stay in bed with us"

Family 248 "He was coughing all night and very restless so he stayed in parent's bed"

Family 280 "Was cold during the night so put her in our bed and she went to sleep"

Family 123

14 Jan 1999, Age 117 days

Put him down at 7:15 fell asleep woke up at 7:25, picked up fell asleep put down at 8:00, woke up at 8:10 fell asleep, put down again at 8:15, slept in own bed till 8:30. Finally fell asleep at 9:40 for the night in our bed

15 Jan, Age 118 days

He would fall asleep in my arms but as soon as I put him down he would wake up - brought into bed - woke up 7 times, cuddled to sleep

16 Jan, Age 119 days

Fell asleep in my arms, put into bed would not sleep so took him in my bed and he fell asleep and stayed in my bed for the night -- woke up 6 times

17 Jan, Age 120 days

He would not go down to sleep in his cot so he stayed in bed with me and went to sleep straight away. Have just found out he has German Measles

18 Jan, Age 121 days

He fell asleep in my arms then when I put him down he slept for 30 mins then woke up. He is still not 100% due to German Measles

19 Jan, Age 122 days

He was very tired so I kissed, cuddled and talked to him and he fell asleep in my bed so I just left him there

Family 417

17th Jan 2000, 98 days

Baby slept well all night in cot in her own room

18th Jan, 99 days

Broken sleep, in bed with mum

19th Jan, 100 days

Woke early, generally irritable, rocked in bed with mum

20th Jan, 101 days

Woke at 23:30, then on and off for most of the night. In bed with mum

21st Jan, 102 days

Ear & chest infection & high temp, sleeps on and off, left downstairs & then taken to bed with mum

22nd Jan, 103 days

In bed with mum all night, slept well

23rd Jan, 104 days

In cot in own room, slept well all night

Implications for bed-sharing SIDS

- Interview data indicate that sometimes parents bring babies into bed when they are irritable and are having trouble sleeping.
- Sleep log data show that some 'twisty' or irritable babies who are brought into bed subsequently develop clinical manifestations of an infection.
- So some babies are particularly likely to be brought into their parents' bed when they are in the prodromal phase of an illness.
- An explanation for bed-sharing deaths among families that don't normally bed-share might therefore be that a vulnerable baby facing a physiological challenge that has not yet manifested clinically, may be taken into parents' bed due to behavioural irritability, where it may succumb to the physiological insult.
- It is important to know why a given baby was in the parents' bed when it died.

What does safe bed-sharing look like?



<http://www.babyfriendly.org.uk/sharebed.html>

Bed-sharing behaviour

	Durham - home ¹	California - lab ²	Bristol - lab ³
No. routinely bed-sharing mother-infant pairs (all bf)	10 pairs	6 pairs	5 pairs
Infant age	2-6 months	2-4 months	1-5 months
Size of bed	Double to King 4ft 6in to 6ft	Single hospital bed, 3 ft	Double bed 4ft 6in
Mother facing infant	76%	74%	71%
Infant facing mother	97%	87%	89%
Face-to-face orientation	65%	68%	56%
Body proximity <20cm	91%	No data	99%

¹ Ball et al (in prep); ² Richard et al (1996); ³ Young (1999)

In all 3 studies breastfeeding bed-sharing mother-infant pairs have been documented sleeping together in a very characteristic manner:

Mothers spontaneously adopt a distinctive posture – a lateral position facing infant, with knees drawn up under infant's feet, and upper arm positioned above the infant's head.



Characteristic bed-sharing position

- Facilitates easy access to breasts by baby
- Babies orient towards their mothers' breasts (olfactory?)
- Safety benefits
 - baby flat on mattress away from pillows
 - baby constrained by mum – can't move up or down bed
 - mum controls height of bed covers over baby
 - very difficult for baby to be rolled on
 - mum close enough to monitor temperature and breathing

On triadic bed-sharing nights fathers' presence in the bed did not appreciably affect the orientation or proximity of mother-infant pair.

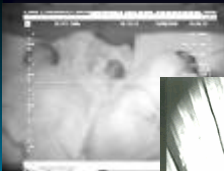
Fathers, in general, did not bed-share with infants in the same way as mothers (at least when mothers were present).



Do non-breastfeeding mother-infant pairs bed-share in the same way as breastfeeding dyads?

A picture emerges of some interesting differences in sleeping behaviours between breast and formula-feeding bed-sharing parents and infants.

- Several formula-fed infants were placed to sleep with heads and shoulders on pillows for most of the night -- breastfed infants were never observed on pillows.
- Mothers of formula-fed infants did not orient themselves towards their infant to the same degree as the mothers of breastfed infants.
- Mothers of formula-fed infants who had never breastfed did not create a constrained space for their infant to sleep in with their bodies.



Effects of bed-sharing on infant physiology

Using behavioural observation and physiological monitoring we compared the effects on infants of sharing their parents' bed with 'by-the-bed' infant sleep arrangements (funded by SCDT).

21 parent-infant triads, breastfed babies, non-smoking parents, healthy term-births, where infants normally slept in the bed or in a cot by the bed were behaviourally and physiologically monitored sleeping in lab over 3 consecutive nights (adjustment night, cot-by-bed night, bed-sharing night).



Temperature

- Associations have been identified between SIDS and high core temperature, sweating and overheating.
- Given the emphasis placed on thermal stress during sleep in SIDS reduction measures it is not surprising that potential overheating has become a cause for concern in the bed-sharing context.
- Tuffnell et al reported that bed-sharing infants were consistently hotter (0.1°C) than solitary sleeping infants.

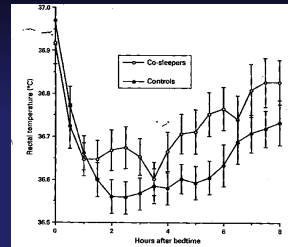
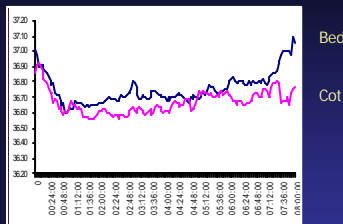


Figure 1 Effect of co-sleeping on the night time rectal temperature of infants. Data have been averaged across all co-sleeping in the co-sleeping group and all in the control group. The first eight hours of rectal temperatures after the infants have been put to bed at midnight. Error bars indicate the standard error.

Sleep lab study



The difference in mean temperatures on bed and cot nights = 0.1°C

Whole night (t test, paired, 1-sided, $p < 0.000001$)

2hrs after onset (t test paired, 1-sided, $p < 0.000001$)

BUT -- Infants spend more sleep time in REM sleep when bed-sharing than when sleeping alone. Infant temperature rises during REM sleep and falls during quiet sleep.

So might the observed higher temperature of infants on the bed-sharing night be related to time spent in REM sleep?

Babies spent significantly more time in REM sleep when bed-sharing than when sleeping alone: 60% REM for the bed night and 47% for the cot night.

Infants' mean core temperature was significantly greater during REM sleep than during Quiet sleep on both bed nights and cot nights.

No significant differences were found between the average temp in REM sleep on the bed and the cot nights nor during Quiet sleep on bed and cot nights.

So, the average temperature of a baby during a bed-sharing night is greater than that of a baby during a cot night is because a longer period of time is spent in REM sleep, not because babies are absolutely hotter on bed nights than cot nights

Effects of bed-sharing vs. cot sleeping?

Compared to cot nights, on bed nights we also found:

- Babies faced mothers more, and breastfed more frequently.
- Babies experienced more bouts of airway covering but did not experience lower SatO_2 values during bouts of external airway covering.
- Babies experienced more bouts of head covering by bedding, but did not experience increased core temperature during bouts of head covering.
- Parents more frequently intervened in bouts of head covering and airway covering.
- Bouts of head and airway covering were of significantly shorter duration on bed nights compared to cot nights.

Risk factors / safety issues

Of 253 families -- drinking 2+ units and bed-sharing on same night:

- 3 Mothers and 13 fathers consumed more than 2 units of alcohol before sleeping with their neonate
- 4 mothers and 17 fathers consumed more than 2 units of alcohol before sleeping with their 3 month old infant
- 7 fathers bed-shared after drinking excessively on sleep log nights [8-20 units]

Of 253 families – smoking and bed-sharing:

- 36.3% of babies bed-shared with a parent who smoked
- 22.1% of breastfeeding babies (4+ wks), bed-shared with one or more smoking parents (7% mums, 20% dads)
- 30% (34/113) families were breastfeeding and smoking; 25/34 (73.5%) were bed-sharing
- So although breastfed babies are less likely to have parents who smoke, they are more likely to bed-share, and those who do smoke aren't curtailing either smoking or bed-sharing in response to the increased risk of SIDS.

Effects of social sleep on bed-sharing infants

- Bed-sharing infants are more likely to be breastfed, and to breastfeed for longer than non-bed-sharing infants – breastfeeding and bed-sharing are mutually reinforcing.
- Youngest infants (those breastfeeding the most) are more likely to bed-share than older infants – will skew profiles of bed-sharing SIDS
- Potentially ill babies are more likely to sleep in parents' bed – might explain some bed-sharing SIDS?
- Breastfeeding bed-sharers seem to instinctively sleep in a safe manner.
- Might instruction re. bed-sharing behaviour help non-breastfeeders bed-share in a safe manner?
- Bed-sharing infants don't overheat -- apparent increases in infant temp = artefact of variations in sleep architecture of bed-sharing and solitary sleeping infants.
- Messages regarding risk factors (e.g. smoking and alcohol) need reinforcing.

Solitary sleeping arrangements for newborn infants are historically novel, culturally circumscribed, developmentally inappropriate, and evolutionarily bizarre.

Insistence that all infants should sleep in solitary environments at all times is biologically unrealistic at best, and damaging at worst.

Social sleep IS normal night-time infant care.



Our challenge is to identify and eliminate the hazards of the social sleeping environment – not to eliminate social sleep itself.