

# What are safe sleeping arrangements for infants?

## EVIDENCE-BASED ANSWER

Non-supine sleep position and parental tobacco use are known risk factors for sudden infant death syndrome (SIDS). Recent studies show that co-sleeping (bed sharing) slightly increases the overall risk of SIDS (strength of recommendation [SOR]: **B**) and is greatest for infants less than 11 weeks old (SOR: **B**). The relationship

between bed sharing and SIDS is strongest for infants whose parents use tobacco (SOR: **B**). Infants who sleep in a room separate from their caregivers or on a couch or an armchair are at increased risk for SIDS (SOR: **B**). Using bedding accessories such as duvets or pillows may increase an infant's risk of SIDS (SOR: **B**).

## CLINICAL COMMENTARY

### Despite its weakness, counsel families based on what evidence is available

This Clinical Inquiry reviews evidence about one of the most controversial and emotion-laden issues of infancy—where should baby sleep? Of course a parent wants to minimize the risk of SIDS, and this review has some evidence of how to accomplish this.

However, often there are pragmatic obstacles to an ideal sleeping arrangement for an infant. One obstacle is exhaustion. Parents are awake multiple times per night with a young infant, and having the infant bed-share is often easier and more efficient for breastfeeding mothers. Poverty is another obstacle—the family may be unable to

afford a crib or bassinet. There can also be cultural obstacles, in that certain cultures traditionally bed-share with infants and children. Physicians are deterred from addressing bed-sharing with families, because the discussion is often lengthy and the family is sometimes defensive.

Despite generally weak evidence on this topic, we must counsel families based on what evidence is available, and not shy away from this discussion. Few things are worse than retrospectively wondering if a case of SIDS could have been prevented.

Perry Brown, MD, FAAP  
Family Medicine Residency of Idaho, Boise;  
University of Washington School of Medicine, Seattle

## Evidence summary

SIDS is defined as the sudden death of an infant aged <1 year of age that remains unexplained after a thorough investigation. The SIDS mortality rate is 0.57 per 1000 infants, with peak incidence among 1- to 5-month-olds.<sup>1</sup> Non-supine sleep position and parental tobacco use are

established risk factors for SIDS and therefore are not explicitly addressed in this review. Using the 9 best-designed case-control studies published to date, each of which used multivariate analysis to control for infant sleep position and parental tobacco use (among other confounders), we evaluated co-sleeping, room sharing,

Michelle R. Adler, MD, MPH  
Department of Family  
Medicine, Oregon Health  
& Science University

Abbas Hyderi, MD, MPH  
Department of Family  
Medicine, University of Illinois  
at Chicago

Andrew Hamilton, MS, MLS  
Reference Librarian, Oregon  
Health & Science University

TABLE

## Sleeping arrangements and their relationship to SIDS

SLEEP ARRANGEMENT	RISK ESTIMATE*
Co-sleeping <sup>2-10</sup>	Overall OR: 2.0 (1.2–3.3) <sup>4</sup> to 16.47 (3.72–72.75) <sup>9</sup> OR if parent is smoker: 4.55 (2.63–7.88) <sup>10</sup> to 17.7 (10.3–20.0) <sup>8</sup> OR if parent is nonsmoker: 0.98 (0.44–2.18) <sup>10</sup> to 2.20 (0.99–4.91) <sup>7</sup>
Sleeping in separate rooms <sup>5,6,11</sup>	OR: 3.13 (1.82–5.26) <sup>6</sup> to 10.49 (4.26–25.89) <sup>5</sup>
Sleeping on couch or chair <sup>4-6,9</sup>	55 non-bed sleepers among 772 total SIDS cases (7.1%) vs 8 non-bed sleepers among 1854 total controls (0.4%) <sup>†</sup>
Soft bedding accessories <sup>4,7-9</sup>	OR for use of pillow: 1.03 (0.66–1.59) <sup>7</sup> to 2.8 (1.3–6.2) <sup>4</sup> OR for use of duvet: 1.32 (0.41–4.15) <sup>9</sup> vs 1.82 (1.30–2.58) <sup>8</sup>

\*All studies used multivariate analyses and controlled for tobacco use and infant sleep position. Risk estimates are lowest to highest OR with 95% CI (unless otherwise specified).  
† Aggregated data from 4 studies given small numbers.  
SIDS, sudden infant death syndrome; OR, odds ratio; CI, confidence interval.

sleep surfaces, and bedding accessories as risk factors for SIDS (TABLE).

A number of factors complicated this review. First, although all studies evaluated infants through 1 year of age, some excluded infants <7 days or <28 days old. Second, studies examined different sleep periods; 2 focused on usual sleeping arrangements,<sup>2,3</sup> 5 on sleeping arrangement immediately prior to death,<sup>4-8</sup> and 2 evaluated both usual and last sleep arrangements.<sup>9,10</sup> Third, variations in definitions of each risk factor and differences in the confounders controlled for made comparing studies challenging. Fourth, given the difficulty in studying infant deaths, the best evidence available comes from case-control studies.

**Co-sleeping.** Overall, 5 of 6 studies demonstrated co-sleeping to be an independent risk factor for SIDS (odds ratio [OR]=2.0–16.5),<sup>2,4-7,9</sup> especially for infants younger than 11 weeks old.<sup>6,8</sup> Four stratified analyses indicate that the risk of co-sleeping is greatest among infants of smokers (OR=4.6–17.7) as compared with infants of nonsmokers (OR=1.0–2.2).<sup>3,7,8,10</sup> Some descriptive studies suggest potential benefits of cosleeping, such as improved breastfeeding and maternal-infant bonding, but these benefits have not been quantified.<sup>1</sup>

**Room sharing.** Three of 4 studies found that infants sleeping in separate rooms from their caregivers had a 3-fold increased risk of SIDS,<sup>5,6,11</sup> while the fourth study found a 10-fold increased risk.<sup>8</sup> One study found the risk was present in infants less than 20 weeks, but was inconclusive for those greater than 20 weeks.<sup>11</sup>

**Sleep surface.** All 4 studies evaluating sleep surface found a significantly increased risk of SIDS for infants sleeping on sofas or armchairs compared with infants sleeping in beds or cribs. Fifty-five of 772 total cases (7.1%) from the 4 studies slept on a non-bed surface compared with 8 of 1854 controls (0.4%).<sup>4-6,9</sup>

**Bedding accessories.** Two of 3 studies found pillow use unrelated to SIDS.<sup>4,7,9</sup> The larger of 2 studies on duvet use found it to be a risk factor for SIDS (OR=1.82).<sup>8</sup>

### Recommendations from others

The American Academy of Pediatrics recommends that infants should sleep supine in the same room, but not the same bed, as their caregivers, while on a firm surface without bedding accessories. They should never sleep on a couch or armchair. Infants may be brought into bed briefly for feeding or comforting. Parents should be encouraged to quit smoking.<sup>10</sup>

### FAST TRACK

**Bed sharing slightly increases the risk of SIDS, especially if the parents use tobacco**

CONTINUED ON PAGE 1087

CONTINUED FROM PAGE 1084

## REFERENCES

1. American Academy of Pediatrics. Task Force on Infant Sleep Position and SIDS. Changing concepts of SIDS: Implications for infant sleeping environment and sleep position. *Pediatrics* 2000; 105:650–656.
2. Brooke H, Gibson A, Tappin D, Brown H. Case-control study of SIDS in Scotland, 1992–5. *BMJ* 1997; 314:1516–1520.
3. Mitchell EA, Tuohy PG, Brunt JM, et al. Risk factors for SIDS following the prevention campaign in New Zealand: A prospective study. *Pediatrics* 1997; 100:835–840.
4. Hauck FR, Herman SM, Donovan M, et al. Sleep environment and the risk of SIDS in an urban population: The Chicago infant mortality study. *Pediatrics* 2003; 111:1207–1214.
5. Blair PS, Fleming PJ, Smith IJ, et al. Babies sleeping with parents: Case-control study of factors influencing the risk of SIDS. *BMJ* 1999; 319:1457–1461.
6. Tappin D, Ecob R, Brooke H. Bedsharing, roomsharing, and SIDS in Scotland: A case-control study. *J Pediatr* 2005; 147:32–37.
7. Vennemann MM, Findeisen M, Butterfass-Bahloul T, et al. Modifiable risk factors for SIDS in Germany: Results of GeSID. *Acta Paediatrica* 2005; 94:655–660.
8. Carpenter RG, Irgens LM, Blair PS, et al. Sudden unexplained infant death in 20 regions in Europe: Case control study. *Lancet* 2004; 363:185–191.
9. McGarvey C, McDonnell M, Chong A, et al. Factors relating to the infant's last sleep environment in SIDS in the Republic of Ireland. *Arch Dis Child* 2003; 88:1058–1064.
10. Scragg R, Mitchell EA, Taylor BJ, et al. Bed sharing, smoking, and alcohol in SIDS. *BMJ* 1993; 307:1312–1318.
11. Scragg RK, Mitchell EA, Stewart AW, et al. Infant room-sharing and prone sleep position in SIDS. *Lancet* 1996; 347:7–12.