Safe Infant Sleep and SIDS Risk Reduction

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No Conflicts of Interest to Disclose

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Los Angeles, California. November 19, 2015.

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How can we, as a population, reduce the risks of SIDS?

Risk Factors ≠ Causes
- Most infants with risk factors will not die from SIDS.
- Some infants without risk factors will die from SIDS.
- However, infants with risk factors are at increased risk of dying from SIDS.


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AAP Recommendation #1

Back to Sleep for every sleep—To reduce the risk of SIDS, infants should be placed for sleep in a supine position (wholly on the back) for every sleep by every caregiver until 1 year of life.

Side sleeping is not safe and is not advised.


Prone Sleeping and SIDS (Odds Ratios vs Non-Prone Sleeping)

Vennemann, 2009
Blair, 2009
Li, 2003
Mitchell, 1999
Mitchell, 1997
Oyen, 1997

0 5 10 15 20

Prone Sleeping and SIDS Rate

U.S. Prone Sleeping and SIDS Rate

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Mitchell Oyen

SIDS Risk Odds Ratio vs Supine Sleep Position


Supine  Prone

Supine

Prone

Trachea

Esophagus

Ed Mitchell

Unaccustomed Prone Sleeping ↑ SIDS Risk


485 SIDS
1,800 Controls

Routine Supine Sleeper
Routine Prone Sleeper
Unaccustomed Prone Sleeper

Unaccustomed Prone Sleeping ↑ SIDS Risk


California Infants Placed on the Back to Sleep: 76.1%

Data Source: Maternal and Infant Health Assessment Survey Prepared by: Maternal, Child and Adolescent Health Program, Center for Family Health, California Department of Public Health

Safe Infant Sleep Recommendations

• Back to sleep for every sleep.
• Use a firm mattress.
• Roomsharing, but not bedsharing.
• Keep soft objects out of the crib.
• Avoid cigarette smoke exposure.
• Immunize according to recommended schedule.


Safe Infant Sleep Recommendations

• Breastfeed.
• Avoid alcohol, and drug exposure.
• Offer a pacifier during sleep.
• Avoid overheating.
• Avoid commercial devices claiming to prevent SIDS.
• Supervised Tummy Time while awake.


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Today, the major risk factors for SUDI are maternal smoking and bed sharing. The challenge is to implement effective strategies that will reduce the exposure to these risks as was done with prone sleeping position.


Room-sharing without bedsharing is recommended—There is evidence that this arrangement decreases the risk of SIDS by as much as 50%. In addition, this arrangement is most likely to prevent suffocation, strangulation, and entrapment that might occur when the infant is sleeping in an adult bed.


Early Study of Maternal Overlaying

In 1892, a Scottish police surgeon, Templeman, was the first to draw attention to the potential role of excessive alcohol consumption and overlaying.

- 258 cases of suffocation in infants.
- More than half of deaths occurred Saturday night.
- Postulated that intoxication impaired arousal responses of parents sleeping with infants, thus increasing the risk of accidental suffocation.


Increased breastfeeding, but not when compared to room-sharing.
- No decrease in apnea.
- No stimulation of breathing.
- Increased arousals (baby wakes mother).
- Decrease in deep sleep.
- No apparent physiological protection.


Infant Bedsharing in Los Angeles County

Bedsharing, Breathing, and Infant Sleep

- Increased breastfeeding, but not when compared to room-sharing.
- No decrease in apnea.
- No stimulation of breathing.
- Increased arousals (baby wakes mother).
- Decrease in deep sleep.
- No apparent physiological protection.
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#### Bedsharing and SIDS in Ireland, 1994-1998

<table>
<thead>
<tr>
<th>Category</th>
<th>Risk Ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td>All</td>
<td>2.89</td>
</tr>
<tr>
<td>Couch</td>
<td>66.90</td>
</tr>
<tr>
<td>&lt;11 weeks</td>
<td>10.20</td>
</tr>
<tr>
<td>&gt;11 weeks</td>
<td>1.07</td>
</tr>
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<td>Separate Room</td>
<td>3.26</td>
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#### Bedsharing and SIDS Risk: CESDI Study (Odds Ratios vs did not sleep with an adult)

<table>
<thead>
<tr>
<th>Category</th>
<th>Odds Ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bedshare, but return to cot</td>
<td>3.9</td>
</tr>
<tr>
<td>Bedshare Whole Night</td>
<td>18.3</td>
</tr>
<tr>
<td>Bedshare on Sofa</td>
<td>18.3</td>
</tr>
<tr>
<td>Separate Room</td>
<td>1.1</td>
</tr>
</tbody>
</table>


#### Bedsharing and SIDS in the U.K.

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<th>Risk Ratio</th>
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<td>&lt;11 weeks</td>
<td>10.20</td>
</tr>
<tr>
<td>&gt;11 weeks</td>
<td>1.07</td>
</tr>
<tr>
<td>Absence of Other Hazards</td>
<td>1.1</td>
</tr>
</tbody>
</table>


### Roomsharing

- Infant's crib or bassinet should be placed in the parents’ bedroom close to the parents’ bed.
- Infant can be brought to bed for breastfeeding, but then returned to the crib.
- Devices promoted to make bedsharing “safe” are not recommended.

*Pediatrics, 128: 1030-1039, 2011.*

### Bedsharing is Especially Unsafe with:

- Infant <3-months of age.
- Parent cigarette smoking.
- Parent is excessively tired; such as sleep deprivation (<4-hours sleep the previous night).
- Parent depressant medication or alcohol use.
- With non-parent or multiple persons.
- Soft or unsafe bed.
- Duvets, pillows, or soft covers.
- Sleeping on a sofa, armchair, or couch.


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**McKenna’s Bedsharing Recommendations**
- All other risk factors should be eliminated.
- Bed in the middle of the floor away from walls or furniture.
- Mattress out of its frame covered with simple, lightweight blankets, tight fitting sheets, and firm pillows.
- Do not bedshare with other children.
- Do not bedshare if parents ever smoked cigarettes.

**AAP Recommendations**
- Room-sharing, with the infant in a crib in the parents’ room next to the adult bed, is safest, and is safer than bedsharing.
- Infants brought to bed for breastfeeding should return to a separate crib.
- Do not bedshare if parents smoke cigarettes.
- Do not bedshare if the parents’ arousal is depressed (alcohol, drugs, sleep deprived <4-hours sleep the night before).
- Do not sleep with an infant on a sofa or chair.

**AAP Recommendation #6**
Avoid smoke exposure during pregnancy and after birth--- Both maternal smoking during pregnancy and smoke in the infant’s environment after birth are major risk factors for SIDS.

**SIDS and Maternal Smoking During Pregnancy**


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SIDs and Parent Postnatal Cigarette Smoking

SIDs Odds Ratio vs No Smoking

Mother <1pk/day Birth
Mother >1pk/day Birth
Mother <1pk/day at 2-mo
Mother >1pk/day at 2-mo
Father at Birth
Father at 2-mo


SIDs and Infant Exposure to Cigarette Smoke

SIDs Odds Ratio vs No Exposure

Hours of Cigarette Exposure per Day

1-2
3-5
6-8
>8


2,000 years ago

Infant Swaddling

Infant Swaddling and SIDS


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Swaddling and SIDS

Swaddling Prone may increase some SIDS risk factors:
• Prevent infants from head lifting or turning to avoid a potentially asphyxial environment.
• SIDS rate 12-times increase when prone in swaddled vs not swaddled babies.

Swaddling Supine may reduce some SIDS risk factors:
• Prevent infants from rolling to prone position.
• Prevent infants from crawling to dangerous asphyxiating environment.
• Prevent infants from pulling blankets over their heads.

Avoid Swaddling if …
• Prone sleeping position.
• Thick blankets.
• Face covered.
• For infants older than 3-months.
• There is a danger when infants begin to roll from supine to prone, the swaddled infant can not regain the supine position.

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Parents Unwilling to Comply with Safe Infant Sleep Recommendations

- Back to Sleep: 22
- No Bedsharing: 20
- Breastfeed: 18
- No Smoking: 3
- Immunize: 18
- No Soft Items in Crib: 22

Parents of Newborn Infants (%)


Primary Care Physicians Do Not Discuss SIDS Risk Reduction

- Behavior can Reduce SIDS: 22
- Knows Back Sleep Safest: 20
- Should Discuss SIDS Risk: 18
- Do Discuss SIDS Risk: 3
- Give Written Material: 18

Parents Unwilling to Comply with Safe Infant Sleep Recommendations

n = 121 parents


Mothers Commonly Receive No Advice on Infant Care Practices

Advice from Physicians

- Immunizations
- Breastfeeding
- Sleep Position
- Sleep Location
- Pacifier Use

Advice from Nurses

- Immunizations
- Breastfeeding
- Sleep Position
- Sleep Location
- Pacifier Use

Advice from Family

- Immunizations
- Breastfeeding
- Sleep Position
- Sleep Location
- Pacifier Use

Advice from Media

- Immunizations
- Breastfeeding
- Sleep Position
- Sleep Location
- Pacifier Use


Mothers Commonly Receive No Advice on Infant Care Practices

- Immunizations
- Breastfeeding
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- Sleep Location
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**Infant Sleep Position Chosen by Nursery Staff in Hospital Normal Newborn Nurseries**

<table>
<thead>
<tr>
<th>Position</th>
<th>% Nurses</th>
</tr>
</thead>
<tbody>
<tr>
<td>Prone</td>
<td>2%</td>
</tr>
<tr>
<td>Side</td>
<td>8%</td>
</tr>
<tr>
<td>Supine</td>
<td>72%</td>
</tr>
<tr>
<td>Side or Supine</td>
<td>18%</td>
</tr>
</tbody>
</table>


**Infant Sleep Position Modeled by Nursery Staff in Hospital Normal Newborn Nurseries**

<table>
<thead>
<tr>
<th>Position</th>
<th>% Mothers</th>
</tr>
</thead>
<tbody>
<tr>
<td>Prone</td>
<td>1%</td>
</tr>
<tr>
<td>Side</td>
<td>49%</td>
</tr>
<tr>
<td>Supine</td>
<td>37%</td>
</tr>
<tr>
<td>Side or Supine</td>
<td>14%</td>
</tr>
</tbody>
</table>


**Infant Sleep Position Mothers will Choose to Use at Home**

<table>
<thead>
<tr>
<th>Position</th>
<th>% Parents</th>
</tr>
</thead>
<tbody>
<tr>
<td>Prone</td>
<td>1%</td>
</tr>
<tr>
<td>Side</td>
<td>50%</td>
</tr>
<tr>
<td>Supine</td>
<td>36%</td>
</tr>
<tr>
<td>Side or Supine</td>
<td>12%</td>
</tr>
</tbody>
</table>


**Mothers' Willingness to Follow Safe Infant Sleep Guidelines at Home**

<table>
<thead>
<tr>
<th>R/M</th>
<th>R/NoM</th>
<th>NoR/M</th>
<th>NoR/NoM</th>
<th>% Mothers who will place their babies supine at home</th>
</tr>
</thead>
<tbody>
<tr>
<td>80%</td>
<td>61%</td>
<td>55%</td>
<td>7%</td>
<td>80% R/M, 61% R/NoM, 55% NoR/M, 7% NoR/NoM</td>
</tr>
</tbody>
</table>


**Why Did Some Nurses Choose the Side Sleeping Position?**

<table>
<thead>
<tr>
<th>Reason</th>
<th>% Nurses</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fear of Aspiration</td>
<td>91%</td>
</tr>
<tr>
<td>Personal Knowledge</td>
<td>41%</td>
</tr>
<tr>
<td>Written Policy</td>
<td>5%</td>
</tr>
<tr>
<td>Verbal Policy</td>
<td>6%</td>
</tr>
<tr>
<td>Physician Instructions</td>
<td>3%</td>
</tr>
<tr>
<td>Head Nurse Instruction</td>
<td>3%</td>
</tr>
</tbody>
</table>

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**Infants who “Spit-up”**

<table>
<thead>
<tr>
<th>Awake</th>
<th>Asleep</th>
</tr>
</thead>
<tbody>
<tr>
<td>3.7%</td>
<td>3.4%</td>
</tr>
</tbody>
</table>

n = 3,240 neonates


**Interventions for Infants who “Spit-up” while Asleep**

- Supine (n=130)
- Side (n=12)

<table>
<thead>
<tr>
<th>Event (%) Requiring intervention</th>
</tr>
</thead>
<tbody>
<tr>
<td>None</td>
</tr>
<tr>
<td>80%</td>
</tr>
</tbody>
</table>


**Supine**
- Alone
- Firm mattress
- Empty crib

**Supine**

**Coroners Must Determine a Manner of Death**

- Natural
- Accidental
- Suicide
- Homicide
- Undetermined (None of the above established)

SIDS

Undetermined. SUDI.

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