Preventing Sudden Unexpected Infant Deaths:

Lessons Learned in Promoting SAFE SLEEP

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Disclosure

Dr. Batra has no financial interests to disclose.
Postneonatal Mortality

- SIDS - 22%
- Congenital malformations
- Accidents
- Diseases of circ system
- Gastritis/colitis
- Assault/homicide
- Septicemia
- Influenza/pneumonia
- Chronic resp dis
- Short gestation
- All other

National Vital Statistics, 2004 data

Two days, five babies die in their sleep

Wayne County is urging parents not to share a bed with a baby, but some experts offer guidance if they do:

- Don't sleep with baby while under the influence of alcohol or drugs, which can make it harder to wake up if the baby is in danger.
- Don't put the baby on pillows or cover its head with a blanket. Also, keep stuffed animals off the bed.
- Make sure there are no gaps between the bed and the headboard where the baby can get stuck.
- Don't take your baby to bed if you smoke.
- Don't let infants share a bed with older children.
Outline

• Brief history of infant death
• SUID/SIDS
• Death Scene investigation
• Review AAP policy statement
• Practical points to take home:
  • Office
  • Hospital
  • Community

Sudden infant death in history

• Throughout history – overlaying of infants was assumed cause of sudden infant death

• Bible – Old Testament – Judgment of Solomon resulted from infant dying by overlay by one of the mothers
Judgment of Solomon

The Judgment of Solomon, 1649, Nicolas Poussin

Sudden infant death in history

- 16th century Florence couple told church authorities they had smothered child "accidentally while sleeping, and without any consciousness on their part of killing"
History

- Until 18th century infant death was a church matter and a social one, not a medical one

- Medieval Church had injunctions against parents taking infants into their beds with punishment should overlaying occur
Proposed causes of Sudden Infant Death

- Thymus – 1800’s – some claimed that an overgrown thymus was a cause of death – disproven in 1931
- Early 1900’s saw more medical explanations – infectious diseases emerged as new etiology

Proposed causes of Sudden Infant Death

- Cow’s milk allergy
- Abnormal calcium/magnesium metabolism
- Stress
- Vitamin E deficiency
- Selenium deficiency
- Apnea theory
History

- 1940’s – articles stating that infectious disease as cause; emphasized not “blaming” parent

- Dr. Woolley in 1945 – infants able to avoid any suffocating positions

1944 - New York
Dr. Abramson

Attention is called to the excessive number of infants under 1 year of age who are dying from accidental mechanical suffocation. These fatalities have shown a progressive increase each year to the point where accidental mechanical smothering now holds the dubious distinction of being the leading cause of accidental death in early infancy.
SIDS - definition

• 1969-NIH conference, with revision in 1991

• Sudden death of an infant under 1 year of age that remains unexplained after a thorough case investigation, including performance of a complete autopsy, examination of the death scene, and review of the clinical history
SIDS

- Initially thought to be major source of sudden unexpected deaths – up to 80%

- 1980s and 1990s - studies showing prone sleeping increased risk of death

- Back to Sleep – mid 1990’s – decreased SIDS rates by 50%

SIDC Rate and Back Sleeping (1988 – 2006)

SIDS Rate Source: CDC, National Center for Health Statistics,
Sleep Position Data: NICHD, National Infant Sleep Position Study.
Triple Risk Model to Explain SIDS

HIGHEST RISK FOR SIDS

Critical period of development

First 6 months

Prone/Side Sleep Position

Nicotine Exposure

Soft Bedding

Overheating

Bed sharing

Possible Brainstem Abnormality

Underlying Vulnerability

Modifiable Pre- and Post-Natal Environmental Stressors

Triple Risk Model to Explain SIDS

SUID-Sudden Unexpected Infant Death

SIDS

Poisoning or overdose

Cardiac channelopathies

Inborn errors of metabolism

Infections

Accidental suffocation

Unknown

SUID

Centers for Disease Control

Shapiro-Mendoza, et al; Pediatrics, 2009
US Infant Mortality Trends

• Conclusion:
  • Infant mortality rates attributable to accidental suffocation and strangulation in bed have quadrupled since 1984.

Possible causes for diagnostic change:

• Stricter adherence to SIDS definition
• Better death scene investigations
• Increase in Child Death Review Team reviews
• Coding preference
Death Certificates & Death Scene Investigation

- Death Certificates
- Often incorrect
- Do not describe circumstances
- Current coding certifies as SIDS if listed as: SIDS or Sudden Unexplained Death or Sudden Unexpected Infant Death

Death Scene Investigation

- CDC 1996 and 2006 – SUID training programs with goal of:
  - Improving data collected at death scenes
  - Promoting consistent classification and reporting of cause of death
Child Death Review

- Team is multidisciplinary: medical, law enforcement, coroner/medical examiner, social service (child protective services), other community members
- Teams in 50 states
- Many have local teams that review deaths
- Goal is prevention

- www.childdeathreview.org

Why are accidental suffocation and strangulation rates increasing?
What does the data show about bedsharing?

- 1999-Nakamura from CPSC states “placing children younger than 2 years to sleep in adult beds exposes them to potentially fatal hazards”

- 2000-Kemp et al – only 8.4% infant deaths found nonprone and alone - rest in unsafe sleep environment

- 2003 – Scheers et al – 20 fold increase in risk of suffocation when placed in adult beds

What does the data show?

2005 – Tappin et al – odds ratio 10 when bed-sharing under 11 weeks, even if nonsmoker (OR 8), or breastfed (OR 13)

2010 – Ostfeld, et al – “Risk-free and single-risk SIDS cases are rare, and most contain multiple risks.”
Child Death Review Data
AJPH 2012

Sleep related deaths from 9 states – 2005-2008

<table>
<thead>
<tr>
<th>Position when found</th>
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<tbody>
<tr>
<td>Back-25% ; Stomach -35%</td>
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<tr>
<td>Side 10%</td>
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<table>
<thead>
<tr>
<th>Infant sleeping with person/animal</th>
</tr>
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<tbody>
<tr>
<td>Yes-64% No 2.3%</td>
</tr>
<tr>
<td>Missing 33%</td>
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<table>
<thead>
<tr>
<th>Infant sleep surface</th>
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</thead>
<tbody>
<tr>
<td>Crib/bassinette</td>
</tr>
<tr>
<td>23%</td>
</tr>
<tr>
<td>Adult bed</td>
</tr>
<tr>
<td>47%</td>
</tr>
<tr>
<td>Couch</td>
</tr>
<tr>
<td>13%</td>
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<tr>
<td>Other</td>
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<tr>
<td>10%</td>
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<tr>
<td>Missing</td>
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<tr>
<td>7%</td>
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</tbody>
</table>

Rates of bed-sharing

- From 1993-2000 – bed-sharing rates increased for infants “usually” sharing adult bed from 5.5% to 12.8%

What is killing our many of our infants?

- Preventable injuries – suffocation and strangulation!

- SIDS is important cause to continue to research - by definition need to eliminate other risk factors
SIDS vs INJURY

- **Unknown** – Why do some infants die in hazardous environments and others do not?

- Are there biologic factors that make some infants more vulnerable to some external risk factors? Yes – but need more info to apply clinically

SIDS vs INJURY

- **Known** – Preventable risk factors exist that reduce the chance of an infant dying in a sleep environment.

- Need to look at this issue from public health injury prevention perspective as well.
AAP Policy Statement

- Expanding recommendations from just SIDS to focus on safe sleep environment
- Acknowledges increase in other sleep related deaths
- Accompanying detailed “technical report”
- Recommendations for up to 1 year of age

AAP Policy Statement 2011

Level A Recommendations

1. Back to sleep for every sleep
   - side sleeping is not safe
   - supine position does not increase the risk of aspiration, even those with GER
   - elevating the head of the crib is not recommended
   - preterm infants should placed supine as soon as medically stable
AAP Policy Statement 2011
Level A Recommendations

Back to sleep
- no evidence that placing on side during the first few hours of life promotes clearance of amniotic fluid - place on back in bassinet
- once infant can roll, the infant can be allowed to remain in the sleep position he assumes

2. Use a firm sleep surface
- crib, bassinet, or portable crib/play yard that conforms to ASTM standards
- check if product has been recalled
- mattresses should be firm
- pillows or cushions should NOT be used as substitutes for mattresses
- no soft materials - pillows, quilts, comforters, sheepskins
AAP Policy Statement 2011
Level A Recommendations

• 2. Sleep surface
  - infant should not be placed on beds due to risk of entrapment/suffocation
  - Sitting devices: car seats, strollers, swings, infant carriers and slings are NOT recommended for routine sleep
  - if infant falls asleep in a sitting device, he should be removed from the product and moved to a crib as soon as practical

AAP Policy Statement 2011
Level A Recommendations

3. Room-sharing without bed-sharing
  - can decrease risk of SIDS by as much as 50%
  - prevent suffocation, strangulation and entrapment in adult bed
  - place crib/play yard/bassinet close to parent’s bed
AAP Policy Statement 2011
Level A Recommendations

3. Room-sharing without bed-sharing
   - devices promoted to make bed-sharing safe
     are NOT recommended
   - infants can be brought into bed for feeding
     but returned when parent ready to sleep
   - do not feed on couch or armchair when
     high risk that parent might fall asleep
Does Safe Bed-sharing Exist?

- NO
- More unsafe:
  - <3 months; smokers; excessive tired; using alcohol or some certain medications; non-parent; multiple persons; soft surface (waterbed, sofa, couch), surface with soft bedding (pillows, blankets, comforters)

AAP Policy Statement 2011
Level A Recommendations

4. Keep soft objects and loose bedding out of the crib to reduce SIDS, suffocation, entrapment, and strangulation
   - no evidence that bumper pads reduce injury; potential for suffocation, entrapment
AAP Policy Statement 2011
Level A Recommendations

5. Pregnant women should receive prenatal care – lower risk of SIDS

6. Avoid smoke exposure during pregnancy and after birth
   - much higher risk of SIDS when infant shares bed with an adult smoker

7. Avoid alcohol and illicit drug use during pregnancy and after birth.

8. Breastfeeding – associated with reduced risk of SIDS

9. Consider offering a pacifier at nap/bedtime – unclear mechanism
   - no strings or attaching to infant clothing
   - breastfed infants – delay until feedings well established
AAP Policy Statement 2011
Level A Recommendations

10. Avoid overheating – no exact range given
   - 1 more layer than adult would wear
   - insufficient evidence to recommend a fan

11. Do NOT use home cardiorespiratory monitors as a strategy to reduce the risk of SIDS.

12. Expand the national campaign to reduce risk of SIDS to include focus on safe sleep.

AAP Policy Statement 2011
Level B Recommendations

1. Infants should be immunized in accordance with AAP/CDC recommendations.

2. Avoid commercial devices marketed to reduce risk of SIDS – wedges, positioners, special mattresses

3. Supervised, awake tummy is recommended to facilitate development and minimize development of positional plagiocephaly.
AAP Policy Statement 2011
Level C Recommendations

1. Health care professionals, staff in NICU/newborn nurseries, and child care providers should endorse the SIDS risk-reduction recommendations from birth
   - hospital staff should model all recommendations

2. Media and manufacturers should follow safe-sleep guidelines in their messaging and advertising.

3. Continue research and surveillance on the risk factors, causes and pathophysiological mechanisms of SIDS and other sleep related infant deaths.
   - standardize protocols for death-scene investigations
What can we do in our office

• Review the AAP guidelines with staff and colleagues - CONSISTENCY!
• Have posters in exam rooms
• Hand out brochures

Spread the Message of Safe Sleep

• Parents are NOT getting the message
• Parents do NOT realize the importance of this prevention – namely, preventing death
• Communities MUST perform good death scene investigations
Safe Sleep MESSAGE

• **A** lone – NOT in parent’s bed
• **B** ack – not side or stomach
• **C** rib – not couch; no loose bedding
• + Pacifier, No tobacco, and Breastfeed

(adapted from Baltimore City Health Dept.)
MESSAGE

• Tell them why -
  • Adult bed – suffocation by adult or pillows/bedding

Nursery from Jennifer Lopez

Aspiration: Supine vs Prone

Back – less likely to aspirate due to trachea lying above esophagus
Hospital Message

• Hospital – Does your newborn nursery have a safe sleep education program?
  • What is modeled before baby goes home?
  • Are nurses and staff giving a clear consistent message?

Hospital Based Education

[Image of a website with the title "Cribs for Kids: Helping Every Baby Sleep Safer"]

[Image of a Hospital Initiative Toolkit]

1. Instructions for Starting a Hospital-based Safe Sleep Program
2. Organizational Chart
3. General Baby Position Guide
COMMUNITY

• Is there a place to refer for resources?
  • E.g. Cribs for Kids
  • Any child under 6 months receives a free play yard (Pack N Play) if they can’t afford one, along with safe sleep education
• Are childcare providers aware of the dangers of unsafe sleep?

www.cribsforkids.org

Health Disparities and Safe Sleep

• Minorities across the world have 2-3 time higher rates of sleep related infant death
• Risk factors: bed-sharing, smoking, prone position
• Allegheny County Health Dept – 17 x higher rates for minorities !!!
CONCLUSION

- Many Sudden Unexpected Infant Deaths are PREVENTABLE

- Too many babies are dying from accidental suffocation and strangulation in unsafe sleep environments

Conclusion

- WE need to do a better job in getting the message to our parents

- What we say does matter

- Make SAFE SLEEP a PRIORITY for the 1st 6 months of life!
Resources:

Safe Sleep Resource Guide for Pediatricians
Erich Batra, MD, FAAP, FACP
ekbatra@aol.com
FREE materials from NIH to handout to patients:

Cribs for Kids Website:
Help establish a local chapter that provides education and
safe-sleeping environments for families in need. Also has a
patient education video to be used in offices or hospitals (for purchase).
http://cribsforkids.com/

Hospital based curriculum for safe sleep:
http://www.cdc.gov/sids/index.htm

Other SIDS/SUID websites:
http://www.firstcandle.org/ - First Candle
http://www.cjsids.org/ - CJ Foundation for SIDS
http://www.sidscenter.org/ - National Sudden and Unexpected Infant/Child Death & Pregnancy Loss Project
http://www.tomorrowschildmi.org/ - Michigan SIDS website - posters can be
purchased that display the pertinent aspects of a safe sleep environment
What does a safe sleep environment look like?

Lower the risk of sudden infant death syndrome (SIDS).

- Place your baby on his or her back to sleep for naps and at night.
- Use sleep clothing, such as a one-piece sleeper, instead of a blanket.
- Do not put anyone smoking near your baby.
- Keep soft objects, stuffed toys, and loose bedding out of your baby's sleep area.
- Keep something covering the baby's head.
- Do not use pillows, blankets, sheepskins, or pillow like bumpers in your baby's sleep area.
- Use a firm mattress in a safety-approved crib covered by a fitted sheet.
MODEL HOSPITAL POLICY MANUAL & TOOL KIT
Incorporating Infant Safe Sleep Practices In A Health Care Setting/Tool Kit For Educating Parents and Caregivers About Infant Safe Sleep

ALLEGHENY COUNTY HEALTH DEPARTMENT
Perinatal Periods of Risk (PPOR) Team
PENNSYLVANIA CHAPTER, AMERICAN ACADEMY OF PEDIATRICS

Safe Sleep For Your Baby
A - alone (no bed-sharing)
B - back
C - crib