

KEEPING INFANTS SAFE AND SECURE (K.I.S.S.)



**CONNECTICUT SAFE SLEEP SYMPOSIUM
June 23, 2011**



SIDS and SUID: A National Perspective

*Rachel Y. Moon, MD
Children's National Medical Center
Washington, DC*

What is SIDS?



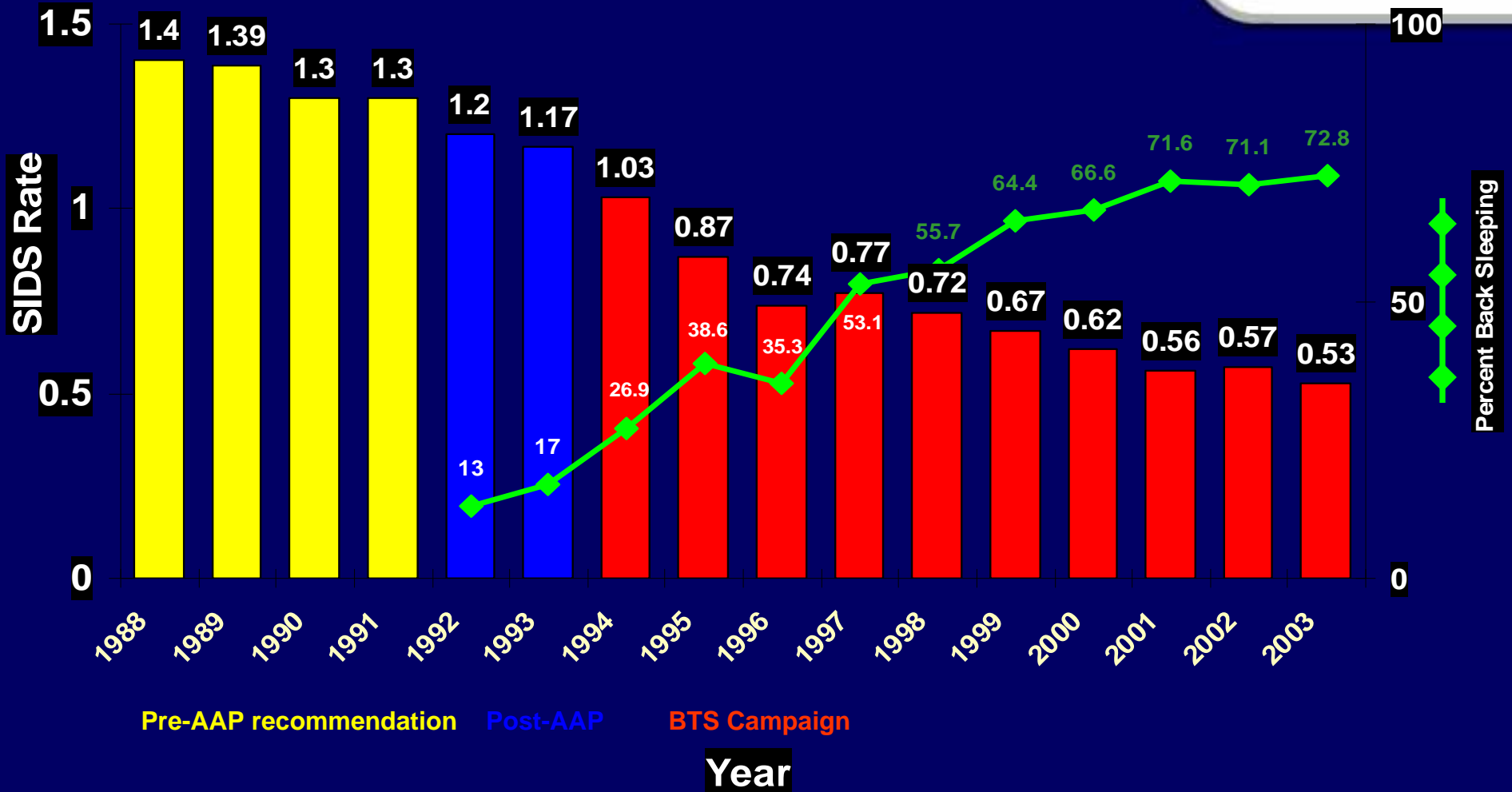
- Sudden death before 1 year of age, usually in a previously healthy infant
- Cause of death unexplained after thorough case investigation, including complete autopsy, death scene investigation, and review of clinical history
- A diagnosis of exclusion

What is SUID?



- **Sudden unexpected infant death**
- **AKA Sudden unexpected death in infancy (SUDI)**
- **Includes**
 - SIDS
 - Suffocation
 - Strangulation
 - Entrapment
 - Undetermined
- **Sleep-related infant deaths (SUID while asleep or in sleep area)**

SIDS Rate and Sleep Position, 1988-2003 (Deaths per 1,000 Live Births)

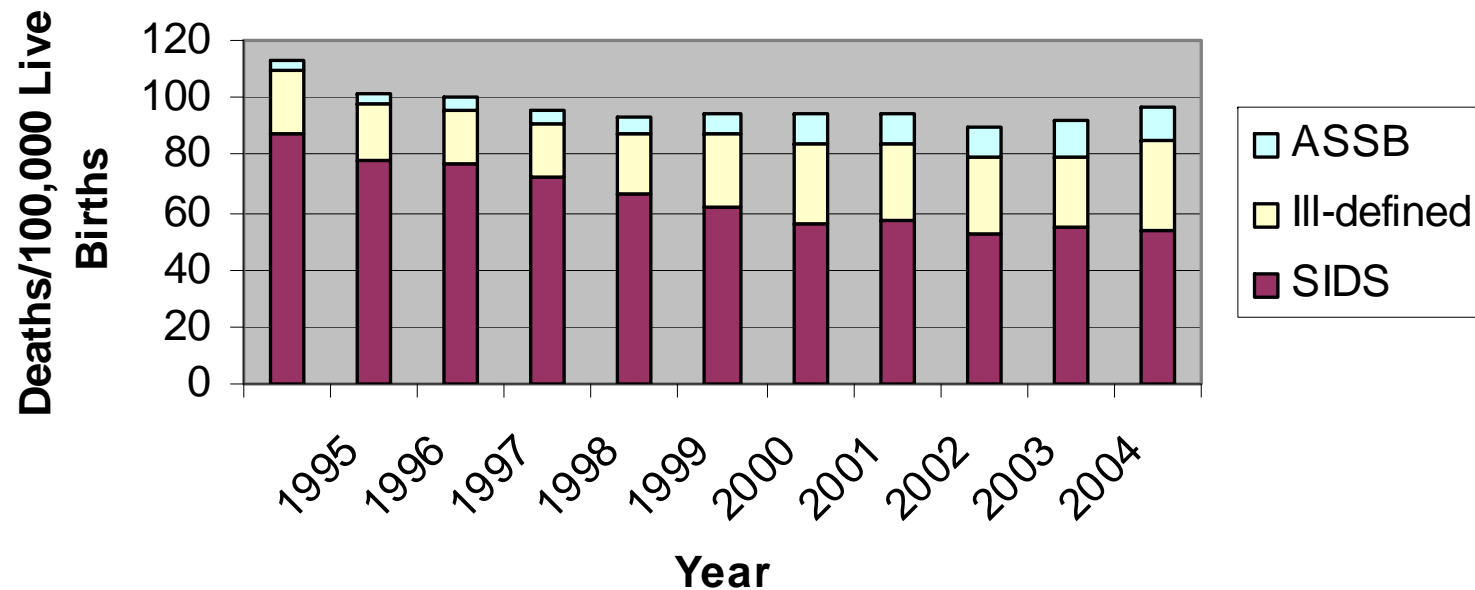


Sleep Position Source: NICHD Household Survey
 SIDS Rate Source: National Center for Health Statistics, CDC

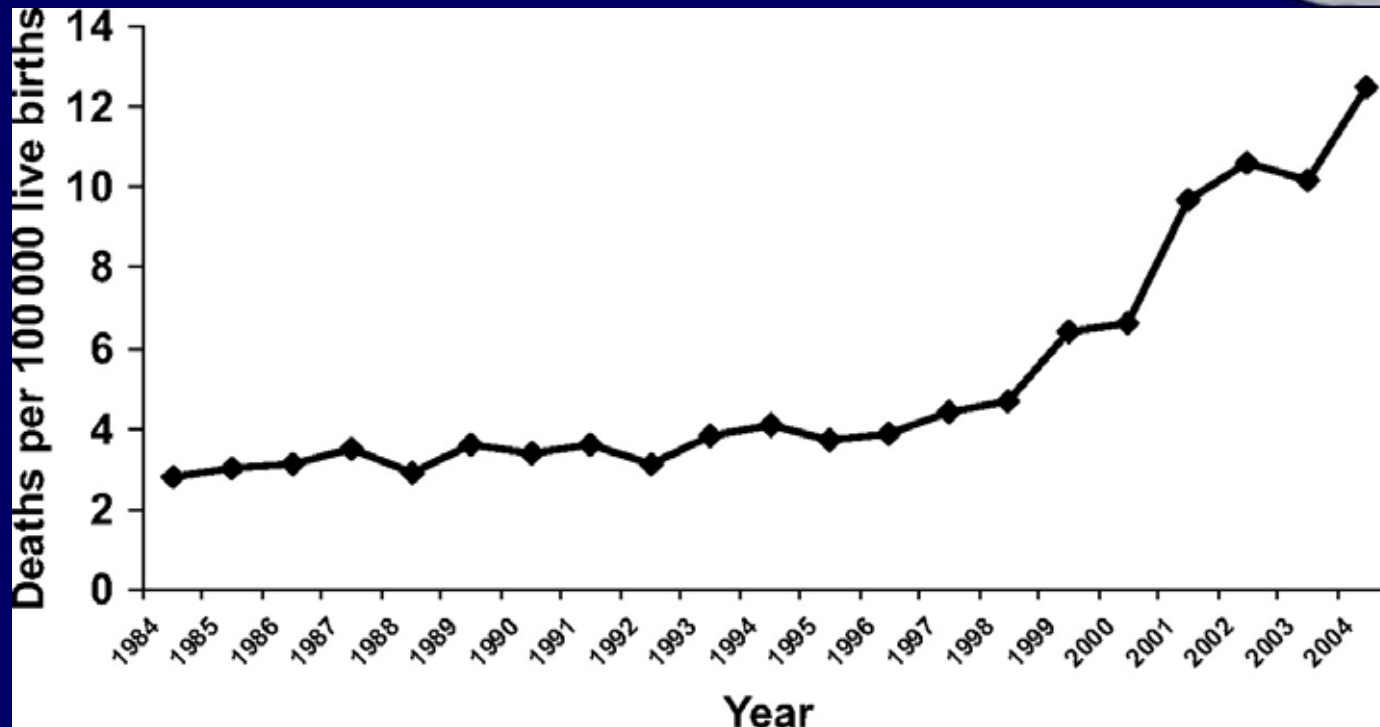
But is that the whole story?



Proportion of Sleep-Related Deaths, US: 1995-2005

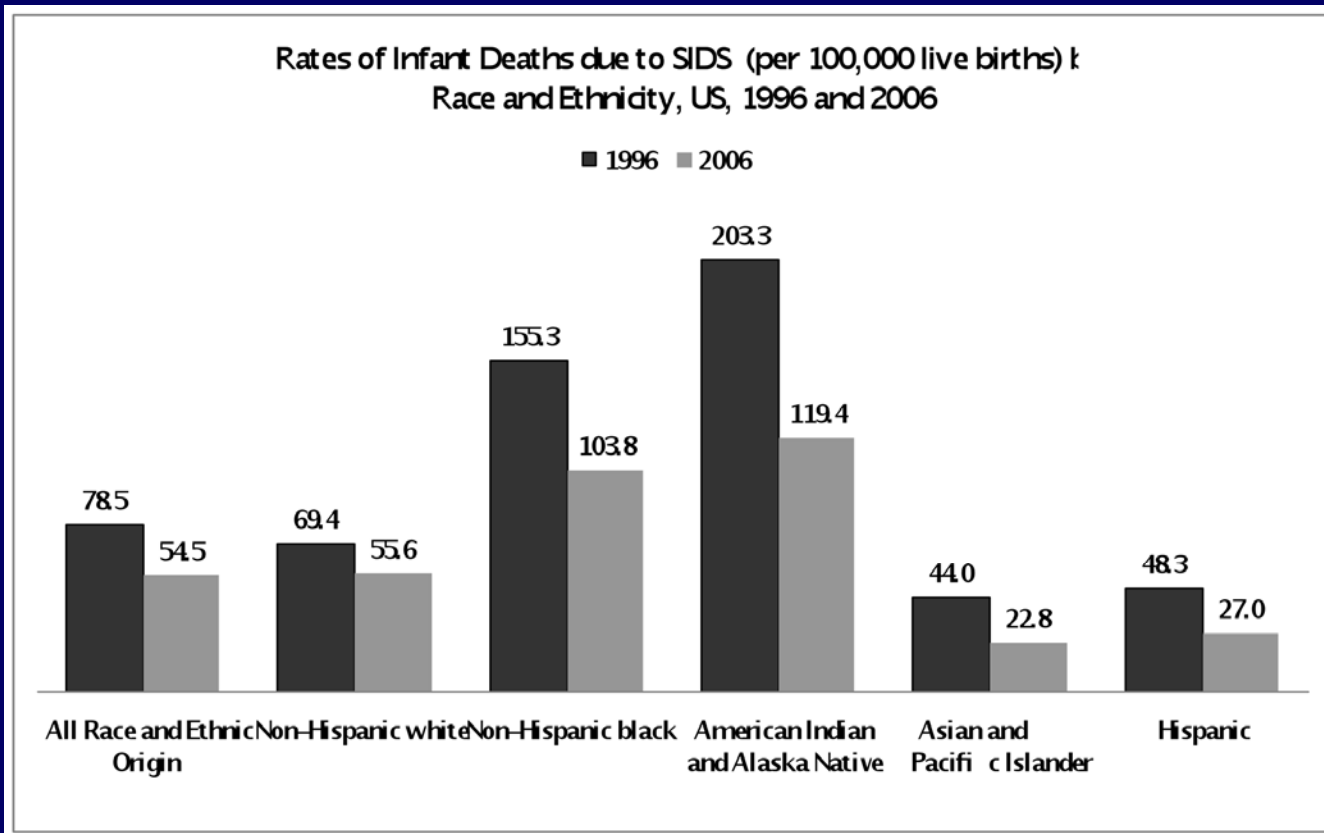


ASSB rates per 100000 live births, United States, 1984-2004

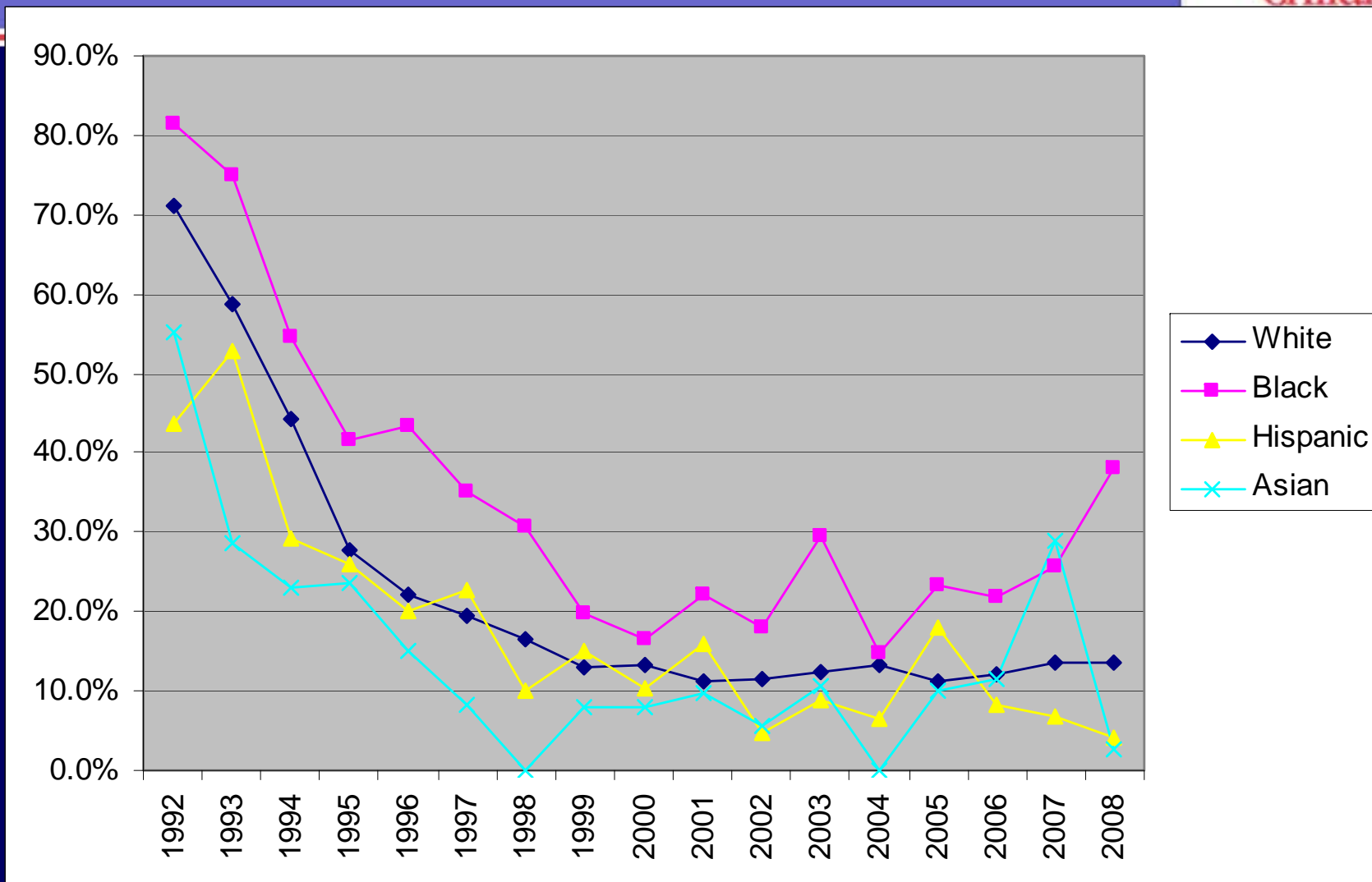


Shapiro-Mendoza, C. K. et al. *Pediatrics* 2009;123:533-539

SIDS rates by race/ethnicity



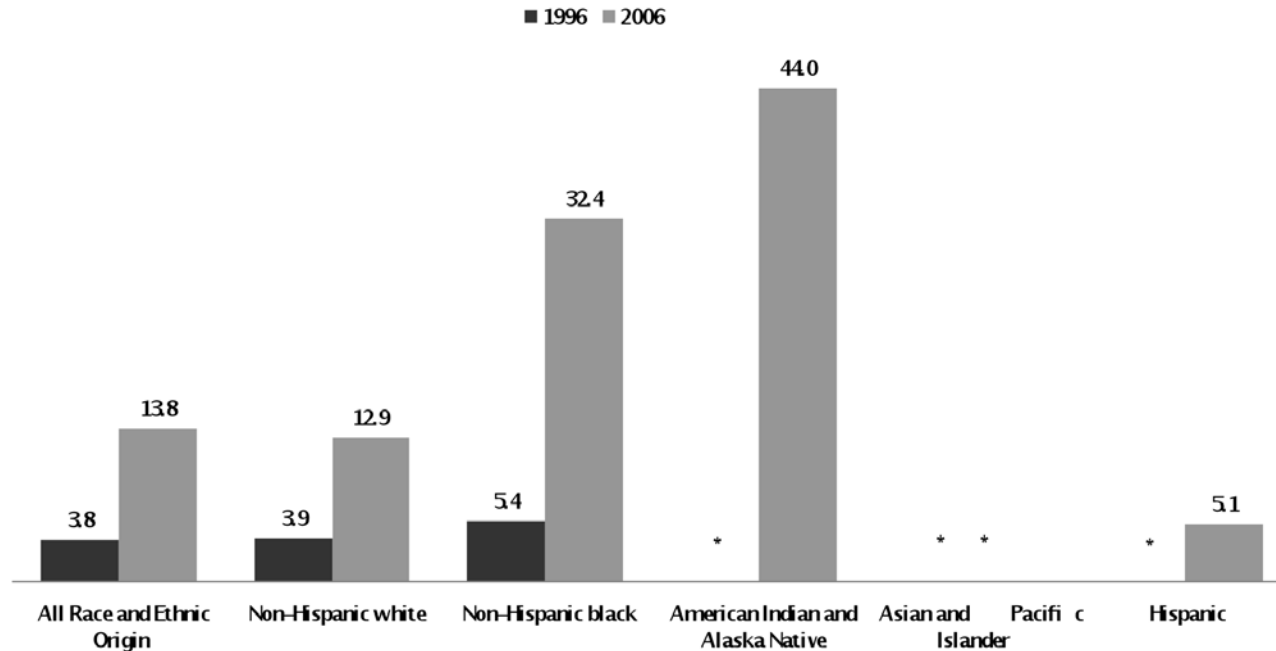
Prone Prevalence by Race/Ethnicity



Accidental suffocation and strangulation in bed: US



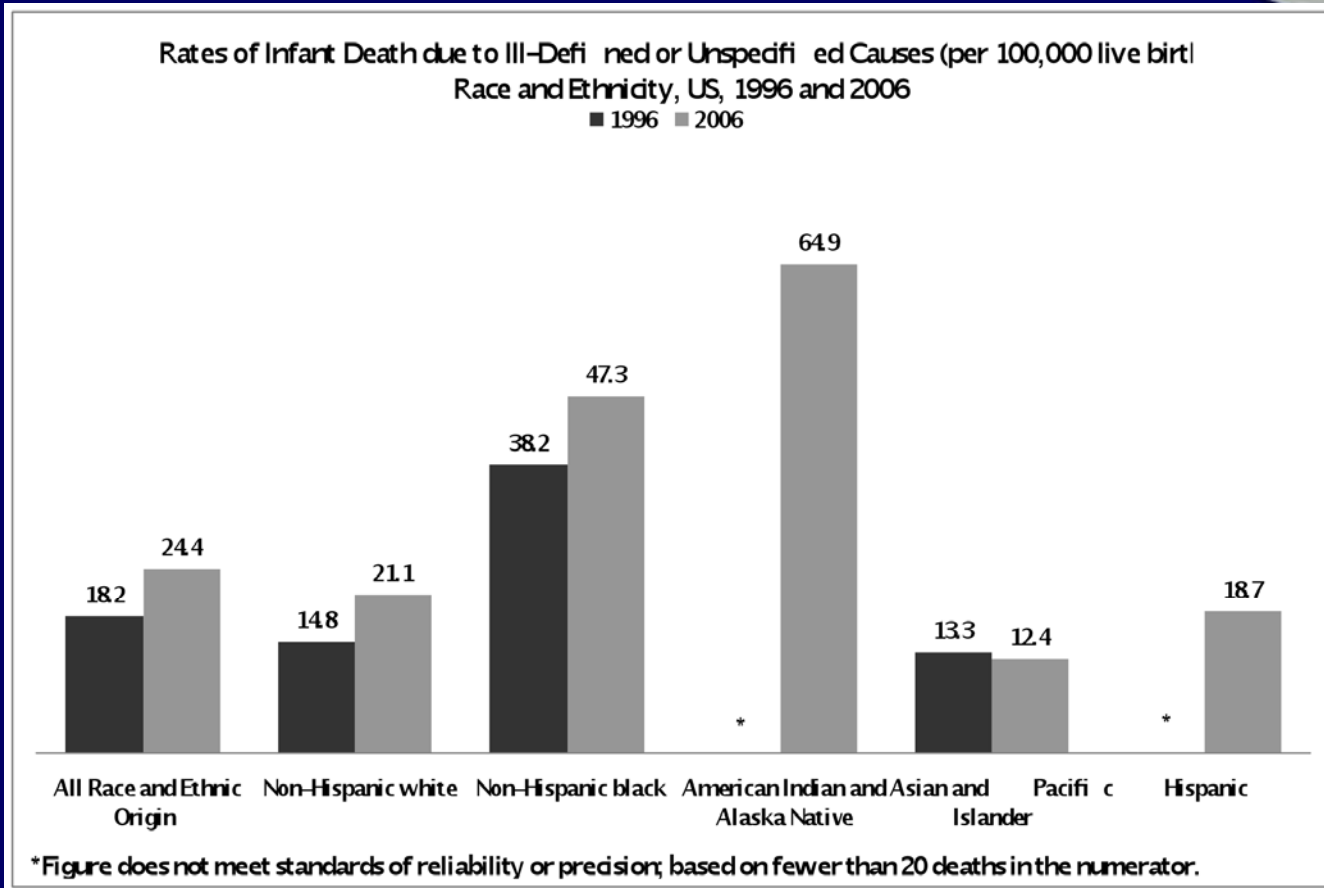
Rates of Infant Death due to Accidental Suffocation in a Bed or Crib (per 100,000 live births)
Race and Ethnicity, US, 1996 and 2006



*Figure does not meet standards of reliability or precision: based on fewer than 20 deaths in the numerator.

Source: CDC Wonder

Undetermined: US



Source: CDC Wonder

Why so many non-SIDS sleep-related deaths?



- **Diagnostic shift**
 - Improved death scene investigation
 - Deaths previously called SIDS now called something else
- **Increases in prone sleeping**
- **Increases in soft bedding use**
- **Increases in bed sharing**

- **Rare to see deaths without some combination of these 3 risk factors**

Soft bedding



Soft Bedding and SIDS



SIDS

- Soft bedding increases risk of SIDS 5x, independent of prone position
- Soft bedding + prone = OR 21.0 (Hauck, 2003)

Accidental suffocation

- CPSC: majority of sleep-related infant deaths due to suffocation involving pillows, quilts, and extra bedding

Soft bedding (CPSC files)



Soft bedding (CPSC files)



Soft bedding (CPSC files)



Bumper pads



- **Thach found 3 mechanisms of death**
 - Suffocation (soft, pillow-like)
 - Entrapment (firm)
 - Strangulation (ties)
- **Use of bumpers only prevents minor injuries**
- **Yeh (2011): analysis of crib injuries in CPSC database: Potential benefits of preventing minor injury with bumper pads far outweighed by risk of serious injury (suffocation, strangulation)**

Soft bedding (CPSC files)



Get soft bedding out!



- **Use a firm sleep surface.**
 - No soft materials or objects placed under a sleeping infant
 - Firm crib mattress, covered by a single sheet
 - Need to explain what “firm” means
- **No soft objects or loose bedding in the crib**
 - Sleep clothing
 - Nothing in the crib but the baby

Sleep Clothing/ Wearable Blanket



- Alternative to blankets
- Cotton or fleece

Bedsharing



Bedsharing - Advantages



- **Facilitation of breastfeeding**
- **Enhancement of parent-child bonding**
- **Increased arousals of parent and baby when in the same room**
- **Common practice in many cultures**
 - Fear that something bad will happen to sleeping baby if not with the parent
 - “Crib death” occurs only in cribs
 - Parents feel this is the best way to protect baby

Bedsharing- Increasingly Popular



- **Renewed popularity of breastfeeding**
- **Bedsharing all night long has more than doubled in past 10 years from 6% to 13% (Willinger, 2003, NISP)**
- **45% spent at least some time in bedsharing situation in prior 2 wks**
- **Higher numbers in low SES, certain ethnic groups (AA, Latino) - more than 50% may be bedsharing all night long**

Problems with Bedsharing



- **Overheating**
- **Soft bedding**
- **No safety standards for adult mattresses**
- **Risk of entrapment, accidental suffocation and strangulation**

Factors increasing risk of SIDS with bedsharing



- One or both parents are smokers (OR 2.3-17.7)
- When infant is <2-3 months old, regardless of parental smoking status (OR 4.7-10.4)
- Soft surfaces (couches, sofas, waterbeds) (OR 5.1-66.9)
- Soft bedding accessories (OR 2.8-4.1)
- Multiple bed sharers (OR 5.4)
- Bed sharing with people other than parents, incl. other children (OR 5.4)
- Parent consumed alcohol, drugs, or is overtired (OR 1.66)
- Returning the infant to his/her own crib is not associated with increased risk

Bedsharing and SIDS



- **No studies have ever shown a protective effect of bed sharing on SIDS**

It's not just SIDS, either



- **Suffocation**
- **Strangulation**
- **Entrapment**
- **Most studies on bedsharing only look at SIDS, not these other deaths**

Bedsharing-Reenactment



- This is mother's first baby; breastfed
- Father has older children
- Baby is 6 weeks old
- Mom goes out: "Please put baby in the bassinet."
- Dad has worked all day and is tired. He had a glass of wine earlier.
- Dad falls asleep (doesn't mean to)

Bedsharing gone wrong



- In next 2 hours, baby falls or rolls off pillow and ends up on belly with face obstructed by soft bedding
- Dad finds baby unresponsive 2 hours later when he wakes up
- The bassinet is on the side of the bed (can't see it)

Bedsharing



- Mother has 6 year old twins who are spending night at Grandma's house
- Mom has been on a trip with the baby (3-1/2 months old) and returns home very tired
- There is crib in the room, but Mom wants to cuddle with baby. They fall asleep.
- In the middle of night, mom awakens and can't find the baby

Entrapment



- The baby is on the floor next to the bed. Her chest is against the table leg and the back against the box springs.
- There is a white mark on the chest from the pressure of the table leg. ME concluded that baby had restriction of breathing and suffocated.

- **No alcohol or drugs**
- **Mom has slept like this with other kids in the past and they lived. She never heard of babies dying this way.**

Breastfeeding and bedsharing



- **In Ostfeld's study, 25% of bedsharing deaths were breastfed infants**

- Younger (median 45 vs 97 days of life)
- More bedding risks (64.7% vs. 45.1%)
- Less likely to be prone (11.8% vs 52.9%)
- Less likely to be exposed to maternal smoking (33% vs 66%)

– Ostfeld, *Pediatrics* 2006

Breastfeeding in armchair



- Mom is breastfeeding with twins supine on recliner arms. She does this every night. She breastfeeds and wants to be ready whenever the babies awaken.
- Twins are 2 months old.
- Since Mom has done this every night, she thinks that it's safe.

Entrapment in chair



- One twin was found dead when the mother awakened.
- The other twin remains alive.
- There were 2 cribs in the home. They had never been used.



FOR IMMEDIATE RELEASE
October 23, 2007



CITY OF PHILADELPHIA

DHS AND HEALTH DEPARTMENT LAUNCH NEW CAMPAIGN WARNING TO PARENTS ABOUT THE DANGERS OF UNSAFE INFANT SLEEPING ENVIRONMENTS

43 Infant Deaths In Past 18 Months Spur New Public Outreach Campaign

“From January 2006 through August of this year in Philadelphia, 43 infants have died in unsafe sleeping environments, defined as the baby co-sleeping with an adult or older sibling, being placed on an unsafe sleeping surface (sofas, cushioned chairs, or cluttered cribs), or sleeping in the presence of tobacco smoke. Over the past 18 months, more Philadelphia infants have died in unsafe sleeping environments than have died from physical abuse over that same time span.”

Parents warned about sleeping with infants

L.A. County officials says the increasingly popular practice known as 'co-sleeping' can have tragic consequences.

By Rong-Gong Lin II, Los Angeles Times Staff Writer

April 24, 2008

In 2006, 44 infants died while sleeping with an adult (76% increase from 2005)

ST. LOUIS POST-DISPATCH



Bed sharing condemned by two children's hospitals

By Nancy Cambria

Jan 24, 2009

“Last year, the city medical examiner's office recorded that 19 otherwise healthy infants died from these factors, up from 14 in 2007. The majority of those deaths were caused by suffocation after an adult or other child rolled onto the baby while in a bed, or the child was unable to breathe in adult bedding such as pillows and blankets, said Michael Graham, chief medical examiner for the city. ‘The leading factor in why otherwise healthy children die is unsafe bedding and bed-sharing,’ Graham said.”

Room Sharing and SIDS Risk

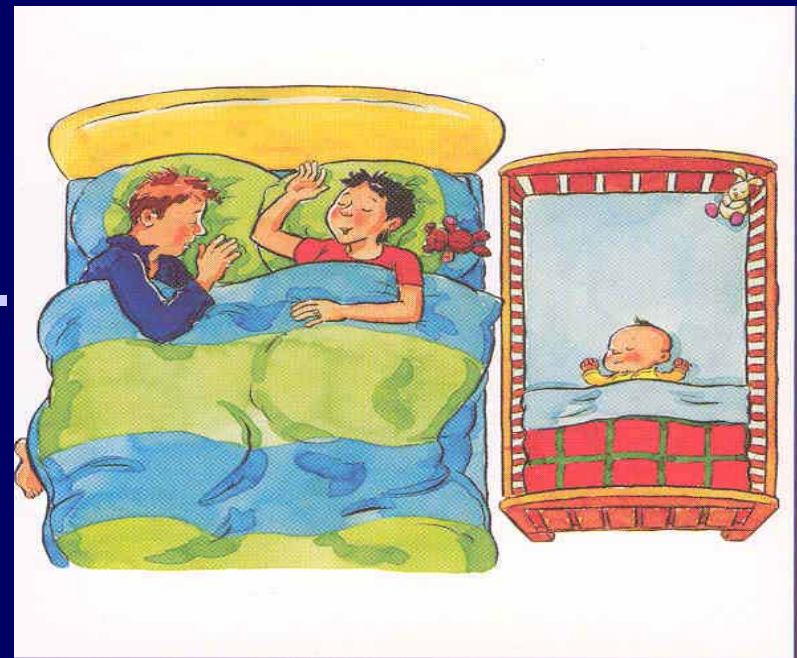


- Room sharing with parents without bed sharing is associated with a lower risk of SIDS (as much as 50%) than sleeping alone in a separate room or in same room with bed sharing
 - New Zealand (1995)
 - England (1999)
 - ECAS (2004)
 - Scotland (2005)

A separate but proximate sleep environment is recommended



- Safety-approved crib, bassinet, or cradle
- Placing crib next to parents' bed will allow for more convenient breastfeeding and contact.
- Can bring baby to bed for nursing or comforting, but return to own crib when parent ready to go to sleep



Controversy



- **Many national public health campaigns are advocating roomsharing without bedsharing**
 - Australia
 - New Zealand
 - United Kingdom
 - Canada
- **Others disagree—believe the evidence is inconclusive, especially for nonsmoking and breastfeeding mothers**

Bed sharing NO-NOs (almost everyone agrees)



- If parent excessively tired or has used substances that could impair alertness
- With other children
- On couch or armchair
- Young infant
- If parent is smoker
- Blankets and pillows

Bedside Sleepers



Theoretically a good idea
Expensive; inconvenient after c-sections
Recent CPSC recall

Conclusions



- **Although SIDS rates have declined, rates of other sleep-related infant deaths have increased**
- **Most of these deaths are due to one or more of the following:**
 - Prone or side sleep position
 - Soft bedding
 - Bed sharing
- **While the recommendations are important for all infants (< 1 year), critically important for the very young infants (<2-3 months)**

Letter from NICU nurse



- "I wanted to thank you for coming and sharing your knowledge with us yesterday... The message of your SIDS prevention was powerful and I pray everyone teaches by the AAP. A very sad and ironic situation occurred last night - one of our premies died while co-bedding with his mother. It was his first night home. He was in our NICU for several months and was doing great. It is so sad. My guess is the heavy blankets or pillows were too much for him. He was a tiny little guy. Please keep delivering your message! We need to work together to save babies."

THANK YOU



KEEPING INFANTS SAFE AND SECURE (K.I.S.S.)



**CONNECTICUT SAFE SLEEP SYMPOSIUM
June 23, 2011**



K.I.S.S.

Keeping Infants Safe and Secure

Susan S. Williams, MD
Associate Medical Examiner
Office of the Chief Medical Examiner

Faith Vos Winkel, MSW
Assistant Child Advocate
Child Fatality Coordinator
Office of the Child Advocate

Office of the Chief Medical Examiner (OCME)

- The OCME determines Cause and Manner of death.
- Conduct Death Investigations
- The OCME issues *ALL* Death Certificates for deaths due to Unnatural Causes.
- The OCME must approve all cremations in the state.



CAUSE OF DEATH

What Happened?

- Pneumonia
- Heart Disease
- Asphyxia due to Airway Obstruction (Suffocation)
- Head Injury

Manner Of Death

1. NATURAL → Due to disease
2. ACCIDENT → Unintended Injury
3. HOMICIDE → Injury Caused by another
4. SUICIDE → Self Inflicted Injury
5. UNDETERMINED → Unknown

My Connecticut Babies



SIDS

- Sudden Infant Death Syndrome
- Not a single "Syndrome" at all
- Used when there are NO findings
- Asphyxia can have NO findings

ASPHYXIA is LACK of OXYGEN to the Body

Due to:

- Airway Obstruction/Suffocation (bedding, pillows, stuffed toys)
- Chest Compression (compressed between/under an object/person)
- Drowning
- Strangulation

Sudden Unexplained Infant Death (SUID)

- Used when there are *NO* findings
- Typically used with *UNDETERMINED* Manner
- Preferred, because SIDS is considered a natural cause of death, whereas SUID means there is no evidence of cause of death
- It DOES NOT EXCLUDE ASPHYXIATION (Accidental or Homicidal)
- We may add Associated with Co-Sleeping with an Adult(s)

State Child Fatality Review Panel

- The panel shall review the circumstances of the death of a child placed in out-of-home care or whose death was due to unexpected or unexplained causes.
- The review will facilitate development of prevention strategies to address identified trends and patterns of risk and to improve coordination of services for children and families in the state.
- The Chief Medical Examiner shall provide timely notice to the Child Advocate, and to the chairperson of the child fatality review panel..
- Any agency having responsibility for the custody or care of children shall provide timely notice to the Child Advocate and the chairperson of the child fatality review panel of the death of a child or a critical incident involving a child in its custody or care.

Multidisciplinary Child Fatality Review Panel

- Office of the Child Advocate
- Office of the Chief Medical Examiner
- Office of the Chief State's Attorney
- Department of Public Safety
- Department of Children and Families
- Department of Public Health
- Pediatrician from Yale New Haven Hospital
- Pediatrician from CT Children's Medical Center
- Community Provider
- CT Coalition Against Domestic Violence
- Injury Prevention (EMT)
- CT Psychological Association
- Community Child Care
- Neonatologist UCONN Medical Center

Cases Reviewed Last Week at the CFRP Meeting

- 16 week old baby sleeping between mom and dad, baby had been placed on a boppy between parents. Baby was found face down between pillow and mattress
- 10 week old baby with a lot of bedding in the crib, along with a pillow "positioner" or wedge type pillow and there was "make shift pillow" that was folded in half in the crib that had a cloth diaper on top of it. The baby was found face down in the wedge pillow

Pretty But Dangerous!



CT Case Review 2001-2011

- Review of 180 infant deaths that there was some indication of a sleep environment concern.
- Co-sleeping is significant factor in many of these cases.
- Primarily the babies are in an adult bed with one or both parents, similar to national data trends.

Some Basic Demographics of CT Cases

- More boy babies than girls
- Roughly equal distribution of Black, Hispanic and White babies
- Bigger Cities:
 - New Haven
 - Waterbury
 - Stamford
 - Bridgeport





Cultural Differences



Sleeping Mats



Soft and Fluffy



National CDR Data

From 28 states

| Incident Sleep Place | Suffocation | SIDS | Unknown Undetermined | Total |
|----------------------|-------------|------|----------------------|----------|
| Total | 1613 | 201 | 459 | 2273 |
| Crib | 135 | 55 | 63 | 253 |
| Bassinette | 65 | 17 | 34 | 116 |
| Couch | 259 | 12 | 63 | 334 |
| Adult Bed | 810 | 90 | 228 | 1128=50% |
| Other | 277 | 27 | 66 | 370 |
| Unknown | 67 | 0 | 5 | 72 |

National SUID Case Registry

- Currently SUID surveillance is monitored using death certificate data
- Death certificate data are limited
- Need a more comprehensive data source to increase understanding of SUID related factors
- CDC's SUID Case Registry collects data from scene investigations, autopsies, and other sources
- CDC and CDR Collaboration

Objectives of SUID Case Registry

- To create state-level surveillance systems that build upon Child Death Review activities
- To categorize SUID using standard definitions
- To monitor the incidence of different types of SUID
- To describe demographic and environmental factors for each type of SUID
- To inform prevention activities and potentially save infant lives

Why is conducting a good scene review important

- It will allow us to monitor trends in Connecticut of Sudden Unexpected Infant Death
- It will allow Connecticut to conduct research to identify childhood risk factors
- It will allow agencies mandated to do prevention to have more targeted initiatives.
- It will continue to promote the need for back to sleep campaign
- It will help us to develop a comprehensive safe sleeping initiative.
- It will expand the safe baby prevention initiatives.



Pictures Speak Volumes





So what's wrong with this picture?



Thank-you

- Dr. Susan Williams:
swilliams@ocme.org
- Faith.voswinkel@ct.gov

KEEPING INFANTS SAFE AND SECURE (K.I.S.S.)



**CONNECTICUT SAFE SLEEP SYMPOSIUM
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Back to Sleep Campaign and Caregiver Education: Lessons Learned

Eve R. Colson, MD
Associate Professor, Pediatrics
Yale University School of Medicine



Collaborators

Michael J Corwin

Marian Willinger

George Lister

Lauren Smith

Ted Colton

Tim Heeren

Brenda Cox

Yvette Cozier

Isabelle Von Kohorn

Denis Rybin

Slone Epidemiology Unit

Data Coordinating Center, BU

WIC Centers

Postpartum Units

Families



Support

Supported by a grant from the National Institute of
Child Health and Human Development



Conflict of Interest

We have no conflict of interest to disclose

Background

- SIDS remains the leading cause of post-neonatal death in the United States
- SIDS rates dropped since the Back to Sleep Campaign
- Marked racial disparity
 - Black infants are twice as likely to die from SIDS
 - Black infants are less likely to be placed on their backs to sleep

Overview

National Infant Sleep Position Study 1992-2010 (NISP)

1992

2010



Focus Groups
2003

WIC
2004-2008

SAFE
2009-present

Timeline

National Infant Sleep Position Study 1992-2010 (NISP)

1992

2010



Focus Groups
2003



WIC
2004-2008



SAFE
2009-present

Focus Groups

- Objective: To determine new barriers and more information about previously identified barriers that interfere with adherence to the Back-to-Sleep recommendations among inner-city, primarily African American caregivers



*Colson, et al. Academic Pediatrics. 2005

Focus Groups

- 9 Groups (Boston and New Haven)
- Primarily Women
- All with current infant care responsibilities
- Low-income, most African-American

Colson, et al. Academic Pediatrics 2005

Focus Groups: Themes

- Beliefs about Choking
- Beliefs about Comfort
- Sources of Advice

Focus Groups: Themes

- Beliefs about Choking

“If they’re on their stomach, it will come out easier because, you know, sometimes it’s hard to hear your baby when they’re gagging, if that was the case. So I preferred the stomach for both of my daughters. And I’m going to do it with him, too.”

Focus Groups: Themes

- Beliefs about Comfort

“On his stomach. And I know that that’s against current pediatric guidelines but that’s the way he’s most comfortable and that’s the position that he sleeps the longest in. When he’s on his back, he startles a lot and he wakes up frequently during his sleep time, and he’s very comfortable when he’s on his stomach.

Focus Groups: Themes

- Advice

“I trust her (mother) 100%. She did 5 of us, 3 grandkids and 1 more on the way. So I trust her.”

Overview

National Infant Sleep Position Study 1992-2010 (NISP)

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2010



↑
Focus Groups
2003



↑
WIC
2004-2008



↑
SAFE
2009-present

WIC Surveys

- Objective

To quantify these barriers, particularly among low-income, primarily black mothers

WIC Surveys

- Face-to face interviews
- Women, Infant, Children (WIC) centers
- 50% African-American clients
- Dallas, Clarksdale, Jackson, New Haven, Detroit, Birmingham
- 2006-2008

WIC Results: Sleep Position

| Infant Sleep Position | N (%) |
|------------------------------|--------------|
| Supine | 1408 (61) |
| Lateral | 489 (21) |
| Prone | 390 (17) |
| Other | 12 (1) |

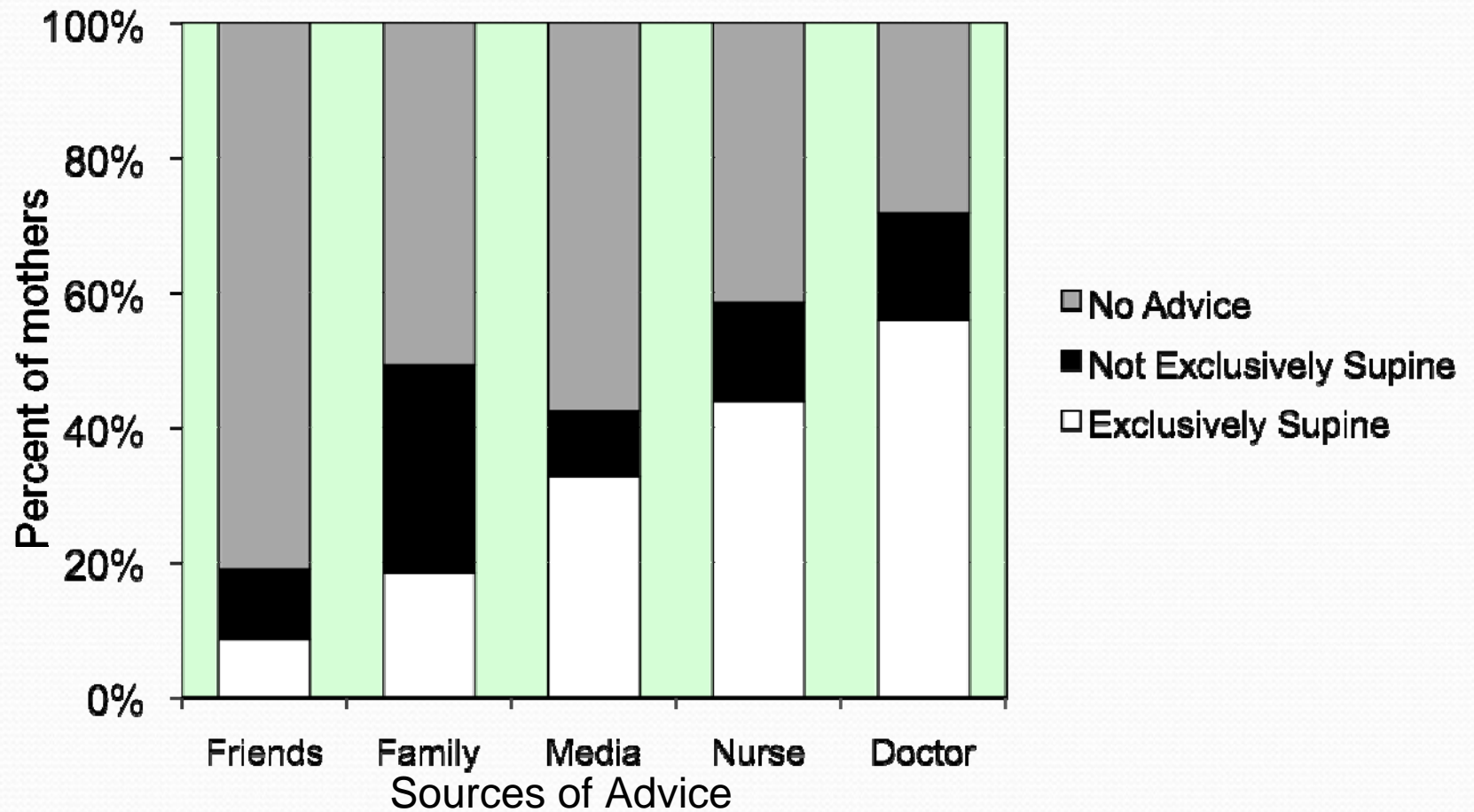
WIC Results: Beliefs about Comfort

| Position infant most comfortable | N (%) |
|---|--------------|
| Non-supine | 1443 (63) |
| None or don't know | 117 (5) |
| Supine | 739 (32) |

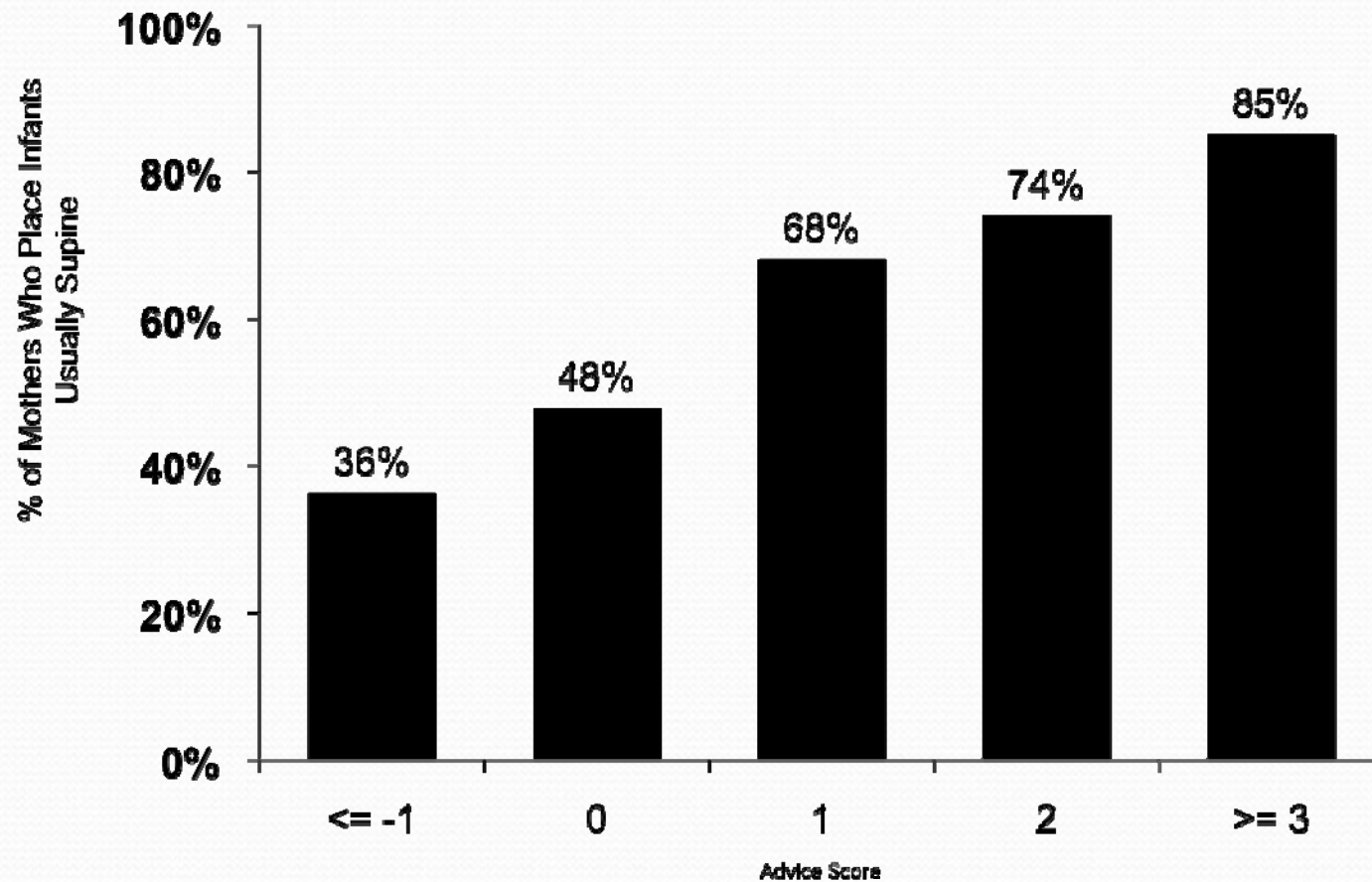
WIC Results: Beliefs about Choking

| Position infant most likely to choke | N (%) |
|---|--------------|
| Non-supine | 836 (36) |
| None or don't know | 183 (8) |
| Supine | 1280 (56) |

WIC Results: Advice

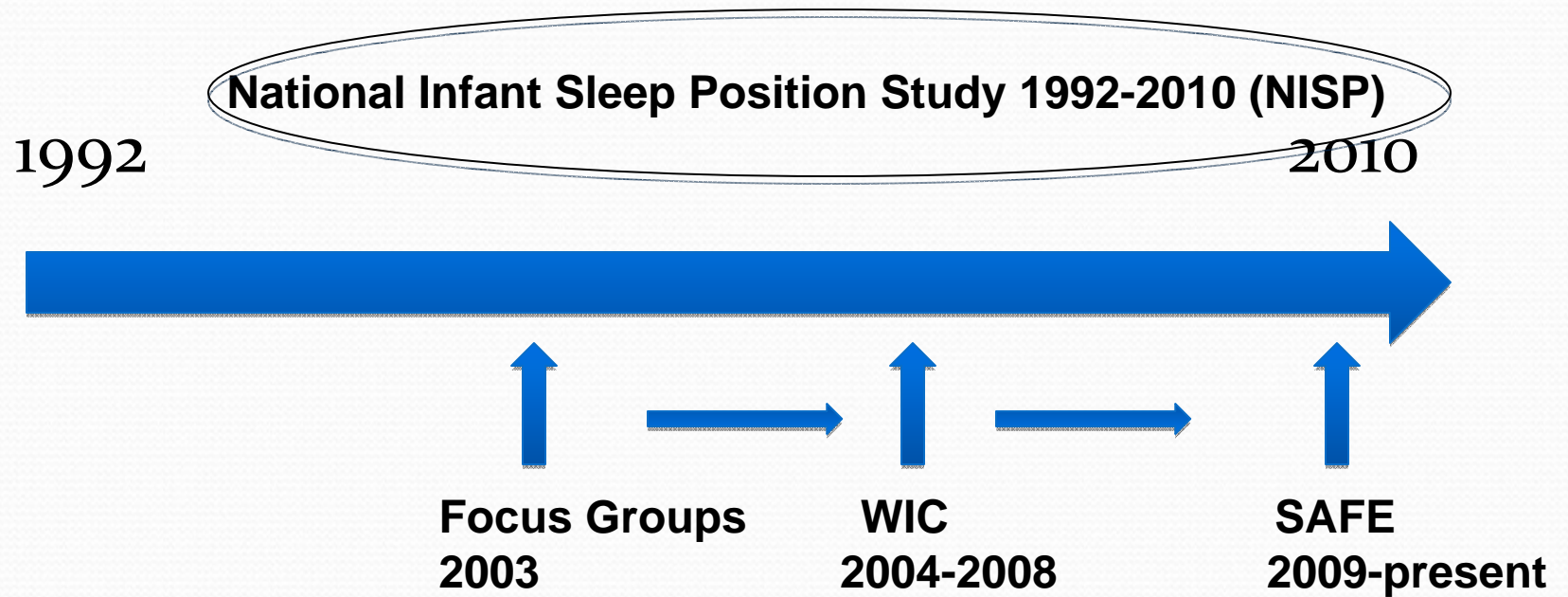


WIC Results: Advice



Von Kohorn I, et al. Archives of Pediatrics and Academic Medicine 2010

Overview





National Infant Sleep Position Study (NISP)

- Objective: To determine trends and factors associated with choice of infant sleeping position.

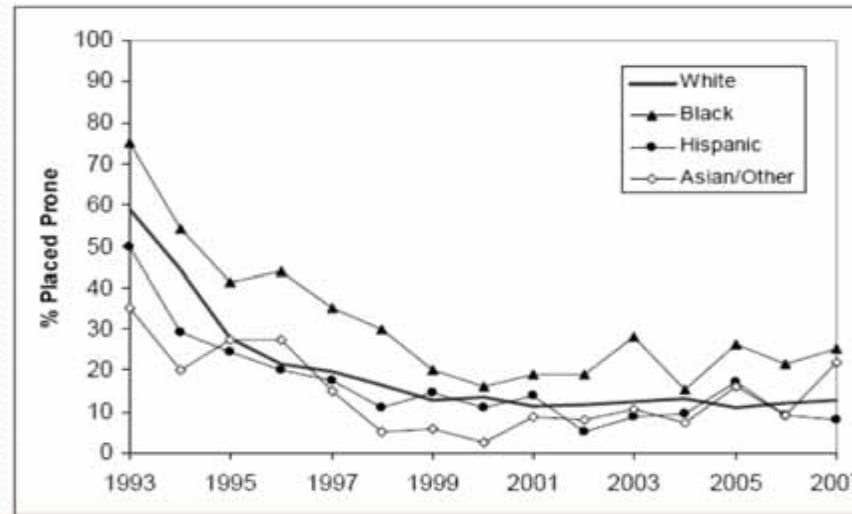
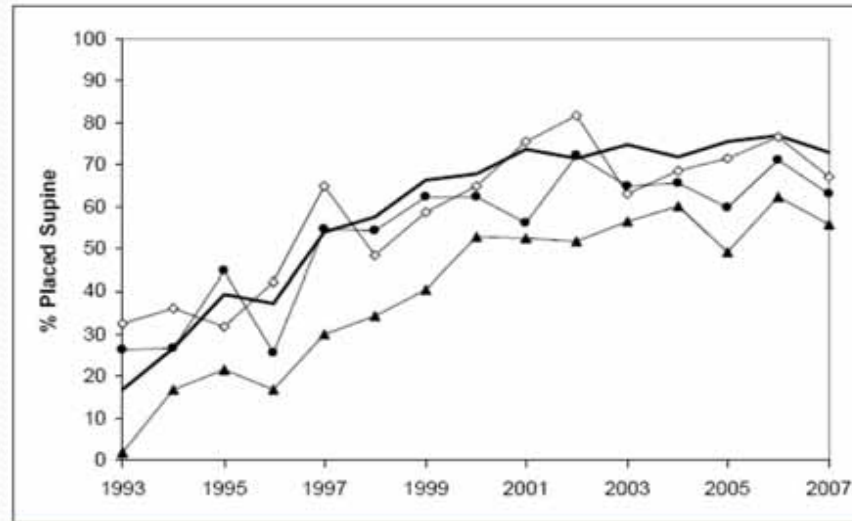


National Infant Sleep Position Study (NISP)

- Annual Telephone survey
- 1000 interviews per year
- Infants < 8 months of age
- Nationally representative
- 1993-2007

NISP

Trends



Colson et al.
Archives of Pediatric
And Adolescent Medicine
2009

NISP

- Time period from 2003-2007:
 - No longer an increase in supine sleep over time
 - ***The differences in use of supine sleep position can be explained almost entirely by concern about comfort, about choking, and advice from a physician (race and other variables not significant)***

Overview

National Infant Sleep Position Study 1992-2010 (NISP)

1992

2010





Issues with NISP

- Telephone survey
- Not truly nationally representative
- Opportunity to further explore sleep position but also other behaviors

Study of Attitudes and Factors Affecting Infant Care (SAFE)

■ Objectives:

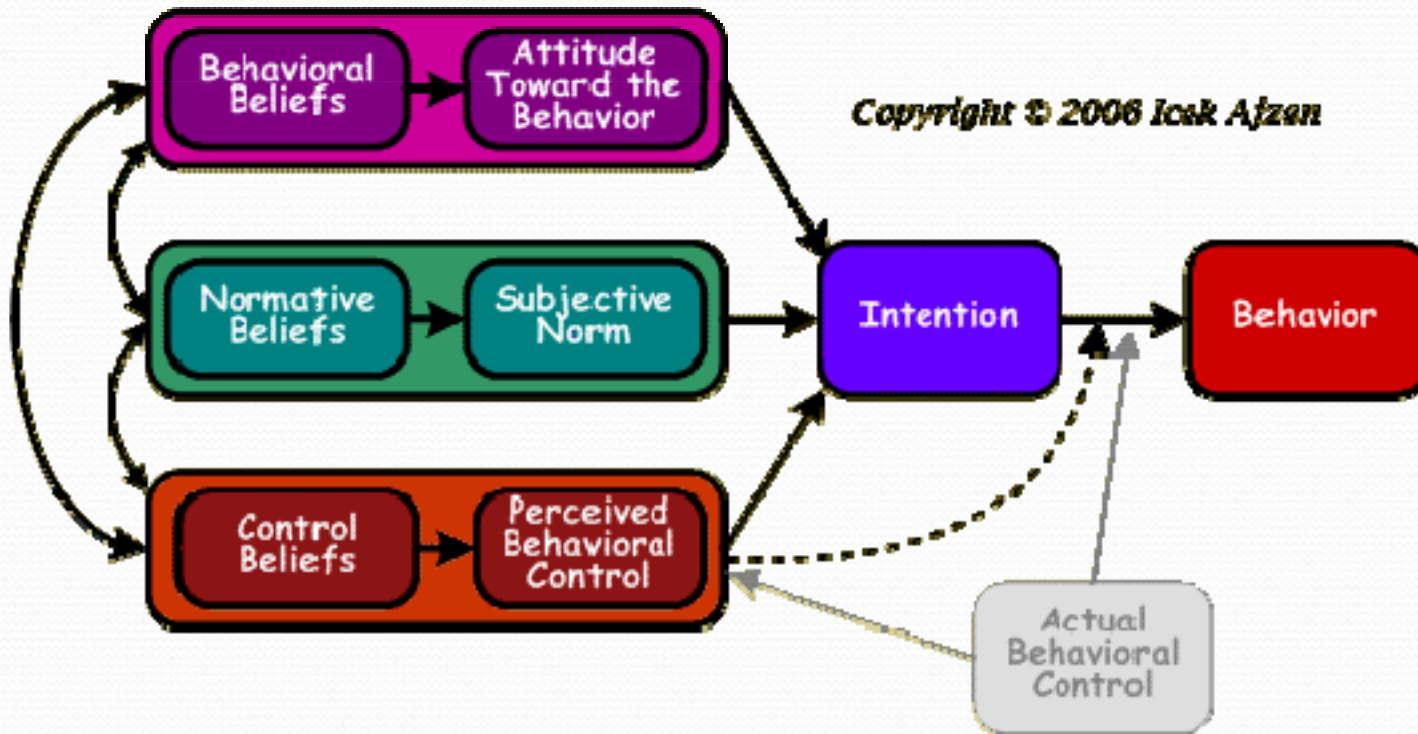
- To evaluate trends in an nationally representative sample regarding recommended infant care practices
- To identify and quantify specific barriers to adherence to infant sleep practice recommendations

SAFE

- Recruit from hospital postpartum units
- Administer web-based survey at 2-4 months
- Nationally representative sample
- 1000 participants per year across 32 sites
- Enrollment over 1 year (to account for seasons)
- Probability (random) sample of hospitals and participants
 - Assure a representative sample including racial and ethnic diversity

SAFE

- Survey Contextual Framework
Theory of Planned Behavior



<http://www.people.umass.edu/aizen/tpb>.

SAFE

- Survey Domains
 - Feeding
 - Vaccinations
 - Pacifier Use
 - Sleep
 - Position for sleep
 - Location for sleep

SAFE

- Series of Questions
 - Intention when infant born
 - What they currently do over the last 2 weeks
 - What they plan to do the next 2 weeks
 - Beliefs about the behavior
 - Beliefs about attitude of others (what advice they have been given)
 - Whether that attitude is important to them
 - Control over the decision

SAFE

- Where we are now
 - Began enrolling Jan 2011
 - 21 hospitals have agreed as of 6/1/11
 - States included so far:
TX,FL,NY,WV,PA,MI,GA,MD,LA,CA,OH,VA,IL,CT,WA

Questions?

National Infant Sleep Position Study 1992-2010 (NISP)

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2010



**Focus Groups
2003**



**WIC
2004-2008**



**SAFE
2009-present**

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Thank you for your participation!