



SUMMER/FALL 2004

EDUCATION AND RESEARCH UPDATE



sids
SUDDEN INFANT DEATH SERVICES
of illinois, inc.

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UNIVERSITY OF CHICAGO SCIENTISTS PINPOINT POSSIBLE CELLULAR CAUSE OF SIDS

July 8, 2004

University of Chicago researchers may have found a crucial clue to understanding and ultimately eliminating Sudden Infant Death Syndrome. SIDS continues to be the leading cause of post neonatal infant mortality in the United States. Approximately 2,500 infants die each year in the U.S. from SIDS.

The researchers describe the specific group of neurons that are responsible for gasping and what happens to these cells when they are deprived of oxygen. Since gasping resets the normal breathing pattern for babies, the scientists suspect that a malfunction in these respiratory pacemakers is the cellular mechanism that leads to SIDS. According to the researchers, during hypoxia, the body shuts down most of the cellular respiratory network and focuses its energy on gasping, which is modulated solely by the sodium-

driven pacemaker neurons. If that specific neuron is blocked for whatever reason, the body cannot gasp. This means there may be nothing wrong with a baby's breathing under normal circumstances, but if the baby goes into hypoxia from a blocked airway or because the baby sleeps on his or her tummy and does not receive sufficient oxygen, the baby needs the sodium-driven pacemakers in order to gasp, which wakes the baby and initiates movement or crying. Gasping is an important auto-resuscitation mechanism that resets the baby's normal breathing rhythm and alerts the baby that something is wrong.

Lead researcher, Dr. Jan-Marino Ramierz, along with 6 of his colleagues, are looking more closely at the effects of serotonin on sodium-driven pacemaker neurons. Their work should provide more insight on the body's gasping mechanism, as well as SIDS. ■

U.S. LIVING LONGER, BUT MORE INFANTS DYING

WebMD Medical News
February 11, 2004

Americans are living longer than ever before. According to a 2002 report from the CDC, life expectancy reached a new high of 77.4 years. However, among infants, the overall death rate has increased from 6.8 deaths per 1000 live births in 2001, to 7.0 deaths per 1000 live births in 2002. The increase in the death rates of infants is within the first 28 days of life.

According Edward Sondik, Director of the CDC's National Center for Health Statistics, "factors such as low birth weight, preterm and multiple births all increase the risk of infant death".

But there was some good news:

- Deaths from SIDS declined between 2001 and 2002, continuing a long-term

downward trend.

- Fewer late-term fetal deaths occurred. These are births defined as 28 or more weeks of gestation.

The new death rate report is based on more than 96% of state death certificates issued in 2002. The CDC also collects annual data from birth records, which document recent trends in low birthweight, cesarean and induced deliveries, and preterm and multiple births – all factors that can impact infant health. ■

SIDS of Illinois now has The SIDS and Infant Death Survival Guide, Safe Sleep for My Grandbaby, and Sudden Infant Death and the Childcare Provider available in Spanish.

For more information on any of our articles, contact the SIDS of Illinois office at 630-305-7300 or email nancy@sidsillinois.org

COMMENTARY ON BEDSHARING IN MINORITY COMMUNITY EDUCATION

Pat Tackitt, RN

Pediatric Mortality Reviewer – Wayne County, MI

MI Public Health Institute – Keeping Kids Alive Program

In response to a discussion amongst SIDS experts and SIDS educators, Pat Tackitt made the following comments:

Over the last 3 1/2 years in Wayne County, Michigan, numerous infant deaths were documented where baby **WAS** on it's back to sleep, but the baby died because it fell off the sleep surface and became wedged between the wall, mattress or ended up on the floor on top of a pillow, clothes pile, plastic bag, or upside down in a waste basket – ending up asphyxiated in all of these instances. We have many, many other instances where baby was supine but bedsharing with children and/or parents on a bed or sofa, and the infant was indeed overlaid. Until the message goes further than “Back to Sleep” and is broadened to **SAFE SLEEP** – where the

recommendations include the protection that crib use offers, placed next to the parent's bed – with baby on its back and nothing else in the crib – a large number of these deaths will continue.

These deaths cannot all be stopped by simply placing baby on its back, when other unsafe sleep issues are still present. These babies needed the protection of a (safe) crib to keep them ...safe from tired children and adults who are not awake to pay attention to the safety needs of a vulnerable infant. Adult sleep surfaces can be made **LESS UNSAFE**, but they cannot be made safe. Only a (safe) crib was designed to keep infants safe (while) unattended (during sleep).

Editors Note: For the past 5 years, SIDS of Illinois has consistently promoted the idea of **SAFE SLEEP FOR BABY**. Recognizing that there is more to risk reduction than sleep position, SIDS of Illinois will continue to make Safe Sleep for Baby the priority in all risk reduction programs. ■

SHORT REFRESHER FOR PEDIATRICIANS ON THE IMPORTANCE OF “BACK TO SLEEP” IN CHILD CARE

As you may know, the American Academy of Pediatrics Task Force on Infant Sleep Positioning recommends that infants be placed to sleep on their backs to reduce the risk of sudden infant death syndrome (SIDS). Since 1992 when the original recommendation was made, the frequency of prone sleeping has decreased from more than 70% to approximately 20% of US infants, and the SIDS rate has decreased by more than 40%. Contraindications that would require an infant to sleep in a position other than on his or her back are rare. The American Academy of Pediatrics, the American Public Health Association, and the Maternal and Child Health Bureau have created a publication called Caring for Our Children: National Health and Safety Performance Standards: Guidelines for Out-of-Home Child Care Programs. In this publication, which is used as a guide in many child care centers and homes across the country, there is a standard regarding infant sleep positioning in the child care center or home. Standard 3.008 reads:

Unless a child has a note from a physician specifying otherwise, infants shall be placed in a supine (back) position for sleeping to lower the risk of Sudden Infant Death Syndrome (SIDS). Soft surfaces and gas trapping objects such as pillows, quilts, sheepskins,



soft bumpers or water beds shall not be placed under or with an infant for sleeping. When infants can easily turn over from the supine to the prone position, they shall be put down to sleep on their back, but allowed to adopt whatever position they prefer for sleep. Unless a doctor specifies the need for a positioning device that restricts movement within the child's bed, such devices shall not be used. movement within the child's bed, such devices shall not be used.

Similar standards are written into the child care regulations of many states.

Please be aware of your role in this process as a pediatrician and the possibility of parents presenting you with a waiver to allow their child to sleep in a position other than on the back for a medical reason in child care. If you sign a waiver for a child to sleep in a position other than on his or her back for a non-medical reason and that child dies of SIDS in child care, you may be held liable. Remember, back is best for healthy babies.

Editors note: SIDS of Illinois offers Safe Sleep Training to childcare providers throughout the state of Illinois. For more information contact Pam at 630-305-7300. ■

SUDDEN INFANT DEATH SYNDROME AND UNCLASSIFIED SUDDEN INFANT DEATHS: A DEFINITIONAL AND DIAGNOSTIC APPROACH

In January, 2004, an invited panel of experts, including pediatric pathologists, forensic pathologists and pediatricians all of whom had extensive experience with sudden infant death, convened in San Diego, California to reexamine the current definition of SIDS. Dr. Bruce Beckwith (Loma Linda University), discussed the history of SIDS definitions, the present status, and possible proposals for the future. This meeting represented an attempt to formulate an approach to sudden infant death that would clarify subsets and assist research but that it was a work in progress that would need to be revisited regularly.

It was agreed that creating and supporting a more inclusive SIDS definition would facilitate uniformity in diagnosis. ■

AIR POLLUTION AND SUDDEN INFANT DEATH SYNDROME

Robert Dales, MD; Richard T. Burnett, PhD; Marc Smith-Doiron, Dipl Adm; David M. Steib, MD; Jeffrey R. Brook, PhD

Pediatrics Volume 113, No. 6, June 2004

Objective: To investigate the influence of ambient air pollution on the incidence of SIDS.

Method: Researchers conducted a time-series analysis comparing daily rates of SIDS and daily concentrations of air pollution during a 16 year period in Canada.

Results: It can be argued that air pollution may be a causal risk factor for SIDS. First, the association is consistent with the following observations: air pollution has been associated with increased morbidity and mortality rates for both cardiac and respiratory diseases, and SIDS manifests as a cardiopulmonary arrest. Second, one indoor air pollutant, namely, tobacco smoke, has been associated with an increased risk of SIDS. Sulfur Dioxide and Nitrogen Dioxide have been associated with low birth weight, which is also a risk factor for SIDS and other infant deaths.

SIDS is thought to occur among infants with impaired ventilatory control. It is possible that gaseous air pollutants may predispose infants to episodes of apnea and/or increase the work of breathing which may be particularly dangerous for infants who have impaired ventilatory control, who may not be able to generate a sufficient compensatory response. ■



The Consumer Product Safety Commission (CPSC) can be found at www.cpsc.gov

... and is a great resource to check for infant products that may have been recalled.

You can also visit their new website at www.recalls.gov.

Second Trimester Maternal Serum Levels of Alpha-Fetoprotein and the Subsequent Risk of Sudden Infant Death Syndrome

NEJM Volume 351:978-986

In this Scottish study the authors note that unexplained stillbirth and SIDS share some features. A raised maternal serum level of alpha-fetoprotein (AFP) during the second trimester of pregnancy is a marker of placental dysfunction and a strong predictor of the risk of unexplained stillbirth. They set out to study whether AFP levels also predict the risk of SIDS. The authors linked a prenatal screening database for women in western Scotland with databases of maternity, perinatal death, and birth and death certifications to assess the association between second-trimester levels of maternal serum AFP and the subsequent risk of SIDS.

They reviewed 214,532 pregnancies with singleton births, and found that there were 114 cases of SIDS. The SIDS incidence was 2.7 per 10,000 births among mothers with AFP levels in the lowest quintile (containing 1/5 of the total sample) and 7.5 per 10,000 births among those with levels in the highest quintile. The risk of SIDS varied inversely with the birth-weight percentile and the gestational age at delivery.

The authors conclude there is a direct association between second-trimester maternal serum AFP levels and the risk of SIDS, which may be mediated in part through impaired fetal growth and preterm birth. ■

RACIAL DISPARITY AND MODIFIABLE RISK FACTORS AMONG INFANTS DYING SUDDENLY AND UNEXPECTEDLY

Pediatrics Vol. 111 No. 2 February 2003, pp. e127-e131

Benjamin Unger, MD, James S. Kemp, MD, Davida Wilkins, Rose Psara, RN, Terrance Ledbetter, AD, Michael Graham, MD, Mary Case, MD, and Bradley Thach, MD

BACKGROUND

Racial disparity in rates of death attributable to sudden infant death syndrome (SIDS) has been observed for many years. Despite decreased SIDS death rates following the "Back to Sleep" intervention in 1994, this disparity in death rates has increased. The prone (belly) sleep position, unsafe sleep surfaces, and sharing a sleep surface with others (bedsharing) increase the risk of sudden infant death. The race-specific prevalence of these modifiable risk factors in sudden unexpected infant deaths- including SIDS, accidental suffocation, and cause of death undetermined has not been investigated in a population based study. Death rates attributable to accidental suffocation and undetermined causes are also higher in African Americans than in other races (non-African American). The potential contribution of unsafe sleep practices to this overall disparity in death rates is uncertain.

OBJECTIVE

The objective of this study was to compare death rates attributable to SIDS and related causes of death in accidental suffocation and undetermined causes in African American and non-African American infants and the prevalence of unsafe sleep practices at time of death. Our hypothesis was that there is a large racial disparity in these modifiable risk factors at the time of death, and that public awareness of this could lead to improved intervention strategies to reduce the disparity in death rates.

DISCUSSION

Studies from the US suggest an increased risk for accidental suffocation for infants bedsharing on adult beds. Most of these deaths involve either overlaying or infants found wedged. The increased risk for SIDS among bedsharing infants including African American infants is well documented. Recent findings confirm that bedsharing is a risk factor for SIDS in US urban, predominantly African American populations. A number of studies have reported a positive interaction between maternal smoking and bedsharing. Recent studies from the US and abroad have documented a number of factors that substantially increase the risk for SIDS in infants who bedshare. These include: infant found dead in bed while sleeping with others and particularly when sleeping with siblings, infant less than 100 days of age, infant sharing a sofa, sleeping with siblings, or the use of pillows or quilts.

RESULTS

The deaths of 119 infants were studied. 81 were African American and 38 were non-African American. SIDS rates were higher in the African American infants as was the rate of accidental suffocation. There was a trend for increased infant deaths diagnosed as undetermined in the African American infants. Bedsharing deaths were twice as common in African Americans, as were deaths on nonstandard sleep surfaces. In African American and non-African American infants, factors that greatly increase the risk of bedsharing, such as sofa sharing or all-night bedsharing, were present in all or many bedsharing deaths.

CONCLUSIONS

Among African American infants dying suddenly and unexpectedly, the high prevalence of nonstandard bed use and bedsharing may underlie, in part, their increased death rates. Public Health messages tailored for the African American community have stressed first and foremost using supine (back) sleep positions. It was observed that there was no difference between African American and non-African American infants and the position they were found (supine or prone) at the time of their death. This suggests that racial disparity in sleep position is not the most important contributor to racial disparity in death rates. The fact that more infants died while on their back or side while bedsharing suggests that these sleep positions are LESS protective when associated with bedsharing. We conclude that public health information targeted to the African American community be given equal emphasis to risks and alternatives to bedsharing as to avoidance of prone sleeping.

To schedule an educational workshop on [Safe Sleep for Babies](#) or on [Tips for Handling Grief](#) for your professional group, please contact Nancy Maruyama.

"85% of the babies who die from SIDS in the city of Chicago, are African American."

*Stephen Saunders, MD, MPH
Associate Director*

*Illinois Department of Human Services
Office of Family Health*