



Sudden Infant Death
Syndrome (SIDS) and
Other Sleep-Related
Causes of Infant Death:

Questions and Answers for Health Care Providers



U.S. DEPARTMENT OF HEALTH AND
HUMAN SERVICES

National Institutes of Health
Eunice Kennedy Shriver National Institute
of Child Health and Human Development

Dear Colleague:

As Director of the *Eunice Kennedy Shriver* National Institute of Child Health and Human Development (NICHD), I am pleased to provide this updated version of *Sudden Infant Death Syndrome (SIDS) and Other Sleep-Related Causes of Infant Death: Questions and Answers for Health Care Providers*. This booklet lists the latest recommendations on reducing the risk of SIDS and other sleep-related causes of infant death from the American Academy of Pediatrics (AAP) Task Force on SIDS and briefly describes the supporting research.

This piece is among several items that we offer as part of the Safe to Sleep® campaign, an expansion of the Back to Sleep campaign that addresses SIDS as well as other sleep-related causes of infant death.

Why the expanded campaign? Because although we have made great progress in reducing SIDS rates—more than 50 percent since the original AAP recommendation about back sleeping in 1992—there is still much to do. Based on their proportion in the U.S. population, African American and American Indian/Alaska Native infants are at higher risk for SIDS than are white or Hispanic infants. Further, as the SIDS rate has decreased, the rates of other sleep-related causes of infant death—such as accidental suffocation—have increased. As long as our babies are dying, we will continue these efforts.

Your contribution to reducing the risk of these deaths by sharing safe infant sleep messages is critical. Research shows that advice from health care providers makes an impact on parent and caregiver choices with regard to infant sleep position and infant sleep environment.

With this booklet, we aim to capitalize on your influence by providing you with answers to common questions about SIDS and other sleep-related causes of infant death and the scientific rationale that supports these answers, so you can alleviate concerns parents and caregivers might have. I encourage you to read this booklet and to discuss these messages with your patients, with families, and with anyone who cares for infants younger than 1 year of age.

Thank you for all you do to care for infants and to educate parents and caregivers about ways to reduce the risk of SIDS and other sleep-related causes of infant death. Let us continue this important work together to help ensure that all children grow into healthy adults.

Sincerely yours,

Alan E. Guttmacher, M.D.
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Research shows: Health care provider advice MATTERS!

Since its beginnings, the Safe to Sleep® campaign (formerly the Back to Sleep campaign) has relied on research evidence as its foundation:

- Research, some of it supported by the NICHD, led to the 1992 recommendation from the American Academy of Pediatrics (AAP) Task Force on SIDS that infants be placed on their backs or sides to sleep to reduce the risk of SIDS.
- Research on the need for widespread education about SIDS and SIDS risk reduction led the NICHD, the AAP, and other collaborators to launch the Back to Sleep campaign in 1994.
- Additional research from the NICHD and other organizations led the AAP Task Force to issue a revised recommendation in 1996 saying that infants should be placed wholly on their backs—the sleep position associated with the lowest risk of SIDS—to reduce the risk of SIDS.
- After research and statistics showed that safe sleep messages were not reaching all groups equally—specifically that they weren't getting into African American and American Indian/Alaska Native communities—the NICHD and its collaborators began tailored outreach efforts to spread risk-reduction messages in these communities.
- Research findings led the NICHD and its collaborators to expand Back to Sleep into the Safe to Sleep® campaign to formally address issues related not only to SIDS, but also to other sleep-related causes of infant death, a safe infant sleep environment, and other infant health issues.



Now research confirms what we have known all along: Advice from health care providers makes a difference in parent and caregiver decisions about sleep position and sleep environment.

Parents and caregivers who took part in the NICHD-supported National Infant Sleep Position (NISP) study and other large-scale research efforts reported that advice from a health care provider influenced their decisions to place babies on their backs to sleep and to avoid sharing an adult bed with their baby.¹ Health care provider counseling is also known to influence other kinds of health-risk and health-promoting behaviors as well. For example, a large-scale review and meta-analysis found that advice on weight loss from primary care physicians



had a significant impact on patient attempts to change behaviors related to their weight.²

This booklet provides answers to common questions about safe infant sleep recommendations, as well as some of the research evidence and scientific references that support those recommendations. By informing all health care providers about SIDS, other sleep-related causes of infant death, such as accidental suffocation, and ways to reduce the risks for these situations, these important and life-saving messages can better reach parents and communities.

What advice should health care providers give to parents and caregivers about ways to reduce the risk of SIDS and other sleep-related causes of infant death?

Health care providers should encourage parents and other caregivers to reduce the risk of SIDS and other sleep-related causes of infant death in the following ways:

- **Always place baby on his or her back to sleep, for naps and at night, to reduce the risk of SIDS.** The back sleep position is always the safest position for all babies, including preterm babies. Keep in mind that every sleep time counts.
- **Use a firm sleep surface, such as a mattress in a safety-approved* crib, covered by a fitted sheet, to reduce the risk of SIDS and other sleep-related causes of infant death.** Firm sleep surfaces can include mattresses in safety-approved* cribs, bassinets, and portable play areas. Do not use a car seat, carrier, swing, or similar product as the baby's everyday sleep area. Never place babies to sleep on soft surfaces, such as on a couch or sofa, pillows, quilts, sheepskins, or blankets.

* For more information on crib safety guidelines, call the Consumer Product Safety Commission at 1-800-638-2772 or visit its website at <http://www.cpsc.gov/en/Safety-Education/Safety-Education-Centers/cribs/>.

■ **Room sharing—keeping the baby’s sleep area in the same room where you or others sleep—reduces the risk of SIDS.** Your baby should not sleep in an adult bed, on a couch, or on a chair alone, with you, or with anyone else. If you bring baby into your bed to feed, make sure to put him or her back in a separate sleep area, such as a safety-approved* crib, bassinet, or portable play area, in your room next to where you sleep when you are finished.



■ **Keep soft objects, toys, crib bumpers, and loose bedding out of your baby’s sleep area to reduce the risk of SIDS and other sleep-related causes of infant death.** Don’t use pillows, blankets, quilts, sheepskins, or crib bumpers anywhere in your baby’s sleep area. Evidence does not support using crib bumpers to prevent injury. In fact, crib bumpers can cause serious injuries and even death. Keeping them out of baby’s sleep area is the best way to avoid these dangers.



■ **To reduce the risk of SIDS, women should:**

- » Get regular health care during pregnancy, and
- » Not smoke, drink alcohol, or use illegal drugs during pregnancy or after the baby is born.

■ **To reduce the risk of SIDS, do not smoke during pregnancy, and do not smoke or allow smoking around your baby.**

■ **Breastfeed your baby to reduce the risk of SIDS.** Breastfeeding has many health benefits for mother and infant. If you bring your baby into your bed to breastfeed, make sure to put him or her back in a separate sleep area, such as a safety-approved* crib, bassinet, or portable play area, in your room next to where you sleep when you are finished.

■ **Give your baby a dry pacifier that is not attached to a string for naps and at night to reduce the risk of SIDS.** But don’t force the baby to use it. If the pacifier falls out of the baby’s mouth during sleep, there is no need to put the pacifier back in. Wait until the baby is used to breastfeeding before trying a pacifier.

- **Do not let your baby get too hot during sleep.** Dress your child in no more than one layer of clothing more than an adult would wear to be comfortable. Keep the room at a temperature that is comfortable for an adult.
- **Follow your health care provider's guidance on your baby's vaccines and regular health checkups.**
- **Avoid products that claim to reduce the risk of SIDS and other sleep-related causes of infant death.** These wedges, positioners, and other products have not been tested for safety or effectiveness.
- **Do not use home heart or breathing monitors to reduce the risk of SIDS.** If you have questions about using monitors for other health conditions, talk with your child's health care provider.
- **Give your infant plenty of Tummy Time when he or she is awake, and when someone is watching.** Supervised Tummy Time helps the baby's neck, shoulder, and arm muscles get stronger. It also helps to prevent flat spots on the back of your baby's head. Holding the baby upright and limiting time in carriers and bouncers can also help prevent flat spots on the back of the baby's head.

What is SIDS?

SIDS is defined as the sudden death of an infant younger than 1 year of age that remains unexplained after a thorough case investigation, including performance of a complete autopsy, thorough examination of the death scene, and review of the infant's and family's clinical histories.³

SIDS is associated with a sleep period but is unpredictable. It is often referred to as a "diagnosis of exclusion" because it is determined only after ruling out other causes of death, including suffocation, infection, or other illnesses. A diagnosis of SIDS is made by collecting information and conducting forensic tests, and by talking with parents, other caregivers, and health care providers.⁴ In the absence of an identifiable cause of death after this process, infant fatalities may be diagnosed as SIDS.⁵

What are Sudden Unexpected Infant Death (SUID) and sleep-related causes of infant death?

SIDS is not the cause of every sudden infant death. Each year in the United States, thousands of infants die suddenly of no immediately obvious cause. These deaths are classified as **SUID**. SUID is the death of an infant younger than 1 year of age that occurs suddenly and unexpectedly.

SUID includes all unexpected deaths: Those without a clear cause, such as SIDS, and those from a known cause, such as accidental suffocation. Many unexpected infant deaths are accidents, but a disease or another external factor, such as poisoning or neglect, can also cause an infant to die unexpectedly. One-half of SUID cases are SIDS.⁶

Sleep-related causes of infant death are those linked to how or where a baby sleeps or slept. They are due to accidental causes, such as: Suffocation; entrapment, when baby gets trapped between two objects, such as a mattress and wall, and can't breathe; or strangulation, when something presses on or wraps around baby's neck, blocking baby's airway. These deaths are not SIDS.

What sleep position is safest for term babies in hospital nurseries?

Healthy babies who are born at term **should be placed wholly on their backs to sleep in hospital nurseries.**

Keep in mind that term includes early term (37 or 38 weeks) births, full-term (39 or 40 weeks) births, or late-term (41 or 42 weeks) births.^{7,8} Research shows that mothers and caregivers often use the same sleep position for their babies at home that they see being used at the hospital.^{9,10} Therefore, all hospital nursery personnel should place babies on their backs to sleep—for naps and at night.



Nursery staff sometimes believe that newborn infants need be on their sides to clear their airways of amniotic fluid. There is no evidence to suggest that such fluid is cleared more readily while in the side position. The AAP recommends

that infants be placed on their backs as soon as they are ready to be placed in a bassinet.¹¹

Health care providers should also expressly tell parents and caregivers that babies should sleep on their backs for all sleep times, for naps and at night, once they go home to reduce the risk of SIDS.

Should preterm infants be placed on their backs for sleep?



Yes. Research shows that preterm infants are at higher risk for SIDS simply because they were born preterm, defined as before 37 weeks' gestation; therefore, placing preterm infants on their backs for sleep is a critically important way to reduce the risk of SIDS.^{12, 13}

Preterm infants who have active respiratory disease may have improved oxygenation if they are placed on their stomachs. Thus, the stomach sleep position during acute respiratory disease may be appropriate for infants in a highly monitored, inpatient setting. Because preterm babies often

remain in the hospital for several days to weeks before discharge, the AAP Task Force recommends that these infants be placed on their backs to sleep as soon as possible after the respiratory condition has stabilized.¹⁴ This practice will allow parents and caregivers to become familiar with the position they should use at home.

In addition, providers should clearly state and strongly recommend that parents and caregivers be especially diligent about making sure their infants are placed in the back sleep position for every sleep time to reduce the risk of SIDS. Epidemiological studies have shown that, when placed on their stomachs to sleep at home, low birth weight or preterm babies may be at higher risk for SIDS than babies born at or after 37 weeks' gestational age.¹⁵

Is the side position as effective as the back sleep position in reducing the risk of SIDS?

No, the side position is not considered a safe alternative to the back sleep position. Studies show that the side sleep position is unstable and increases the chance that infants will roll onto their stomachs—the sleep position associated with the highest SIDS risk.¹⁶

The AAP Task Force recommends that infants be placed **wholly on their backs** to sleep for naps and at night to reduce the risk of SIDS.

Can infants be placed to sleep on their stomachs for naps or for short periods of rest?

This practice is not recommended. Studies show that babies who are used to sleeping on their backs, but who are then placed on their stomachs or sides to sleep, such as for a nap, are at *significantly* higher risk for SIDS.¹⁷ This risk is actually greater—sometimes seven to eight times greater—than that of infants who are always placed on their stomachs or sides to sleep.¹⁸

Evidence suggests that secondary caregivers and child care providers are not always aware of the increased risk from unaccustomed sleep position.^{19,20} Therefore, health care providers, parents, and caregivers need to be very clear in recommending that everyone who cares for baby—including grandparents, child care providers, and babysitters—knows that babies should be placed on their backs to sleep for naps and at night, and that every sleep time counts.

Are there any circumstances when babies should be placed on their stomachs to sleep?

Healthy babies should always be placed on their backs to sleep for naps and at night.

Babies with certain upper-airway malformations (e.g., Robin syndrome) may have acute airway obstructive episodes that are relieved by prone positioning.²¹ However, these cases are rare; health care providers should clearly state the reasons for the prone recommendation to the parents and caregivers in these cases.

There has been concern about aspiration among babies diagnosed with gastroesophageal reflux who are placed in the back position for sleep. Current evidence suggests that even infants with gastroesophageal reflux should be placed on their backs to sleep, with the rare exception of infants for whom the risk of death from gastroesophageal reflux is greater than the risk of SIDS.²²

There may be other infants for whom the risk/benefit balance favors stomach sleeping. Health care providers should consider the potential benefit to the infant when recommending sleep position.

If medical personnel determine that the stomach sleep position is necessary because of a medical condition or other concern, health care providers should advise parents and caregivers to reduce the risk of SIDS in other ways, such as by avoiding soft bedding and ensuring that infants do not overheat during sleep. For most infants, however, stomach and side sleeping are not advised.²³

Will babies aspirate if they regurgitate while sleeping on their backs?

There is no evidence that aspiration is more common among healthy infants who sleep in the supine position than among healthy infants who sleep in the prone position.^{24, 25} Furthermore, in countries (including the United States) that have seen a major change in infant sleep position—from mainly stomach sleeping to mostly back sleeping—the incidence of serious or fatal choking has not increased.²⁶

In fact, babies may actually clear secretions better when placed on their backs. When babies are in the back sleep position, the trachea lies on top of the esophagus (see Figure 1). Anything regurgitated or refluxed from the esophagus must work against gravity to be aspirated into the trachea.

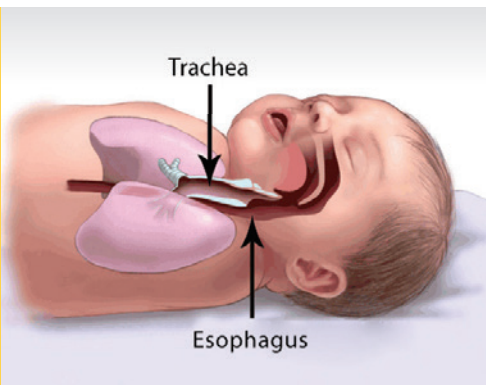


Figure 1

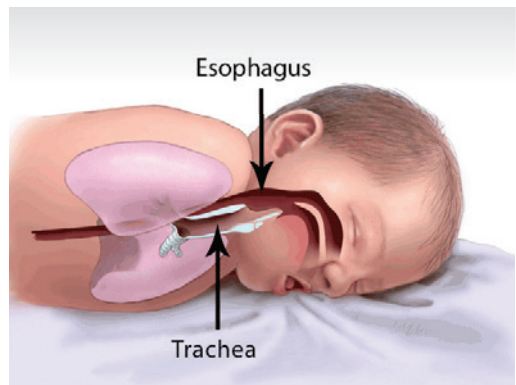


Figure 2

Conversely, when an infant is in the stomach sleep position, anything regurgitated or refluxed will pool at the opening of the trachea, making it easier for the infant to aspirate (see Figure 2). Also, chemosensitive tissue that initiates the reflex is more prominent on the posterior versus anterior pharyngeal wall, thus suggesting an even greater protection against aspiration when the baby is lying on his or her back.

Of the very few reported cases of death due to choking, most of the infants were in the stomach sleep position.

Should parents or caregivers be advised to reposition their infant if he or she rolls onto the stomach from the back position?

Studies show that, during early infancy, it is unusual for a baby who is placed in the back sleep position to roll onto his or her stomach.²⁷ However, once infants are more developmentally advanced, they often roll over on their own. In this situation, when infants roll over on their own, there is no evidence that they need to be repositioned to reduce the risk of SIDS. It is most important that the infant starts sleep in the back sleep position for every sleep time. Keeping the sleep area clear of soft or loose bedding also increases safety for the infant if he or she rolls onto the stomach.

What is the best sleep surface for reducing the risk of SIDS and other sleep-related causes of infant death?

A firm sleep surface, such as a mattress in a safety-approved* crib, bassinet, or portable play area, covered by a fitted sheet, is associated with the lowest risk of SIDS and other sleep-related causes of infant death.

Sleeping on soft surfaces or soft bedding, such as quilts, duvets, and pillows, is associated with increased risk of SIDS. Sleeping under soft bedding, particularly pillows, quilts, and extra bedding, is also associated with increased risk of accidental suffocation.²⁸

* For more information on crib safety guidelines, call the Consumer Product Safety Commission at 1-800-638-2772 or visit its website at <http://www.cpsc.gov/en/Safety-Education/Safety-Education-Centers/cribs/>.



In addition, infants should not be placed on adult mattresses, beds, sofas, or chairs for sleep. These surfaces are typically softer than mattresses in safety-approved* cribs. Consequently, they pose additional risks for other sleep-related causes of infant death, such as entrapment (between the mattress and the wall) and accidental suffocation.

Car seats and other sitting devices, such as strollers, swings, infant carriers, and infant slings (for extended sleep periods), also are not recommended for routine sleep, but this recommendation is related more to sleep

position than to sleep surface. Infants younger than 1 month who are placed in sitting devices for sleep might be at increased risk of upper airway obstruction and oxygen desaturation.²⁹ Increased rates of injuries resulting from car seats being placed on elevated surfaces and then falling have also been reported; in some cases, this situation results in suffocation.

Does bed sharing reduce the risk of SIDS?

Current evidence does not support bed sharing as a protective strategy against SIDS. On the contrary, evidence is growing that bed sharing increases the risk for SIDS and other sleep-related causes of infant death, such as accidental suffocation and entrapment, or injury.



A mother room sharing with her infant.

To communicate the risk of SIDS and other sleep-related causes of infant death to parents and caregivers effectively, it is important to understand the meanings of the terms—bed sharing, co-sleeping, and room sharing—defined below.

■ **Room sharing:** When an infant sleeps in the same room as parents, but in a separate sleep area, such as a crib, bassinet, or play yard next to an adult bed. **Room sharing is known to reduce the risk of SIDS and other sleep-related causes of infant death and is recommended by the AAP.**

- **Bed sharing:** When an infant sleeps on the same surface as another person. This surface can be a bed, couch, or chair. Sleeping with a baby in an adult bed increases the risk of accidental suffocation and other sleep-related causes of infant death.
- **Co-sleeping:** When a parent and infant sleep in close proximity to one another, either on the same surface or on different surfaces. This is done so that they are able to see, hear, and/or touch each other. Co-sleeping can refer to either room sharing or bed sharing.

Bed sharing and co-sleeping are often used interchangeably, but they mean different things. Room sharing is a fairly new term and is recommended by the AAP to aid in feeding, comforting, and monitoring the infant. Room sharing without bed sharing has also been shown to reduce the risk of SIDS by half.

Bed sharing among infants and family members, particularly among adults and infants, is common in many cultures.³⁰ Many mothers share a bed with their infants because it makes breastfeeding easier and enhances bonding. Even though some believe that bed sharing may reduce the risk of SIDS because the parent is nearby to monitor the baby, *studies do not support bed sharing as a protective strategy for SIDS.*³¹

Bed sharing is very risky when:

- The adult smokes cigarettes or has consumed alcohol or medication that causes drowsiness.^{32, 33, 34}
- The baby shares a bed with other people or with more than one person.^{35, 36}
- The sleep surface is a couch or sofa.^{37, 38, 39}
- The baby is younger than 11 to 14 weeks of age.^{40, 41, 42}
- The mattress on the shared adult bed is softer than a safety-approved* crib mattress.^{43, 44}

* For more information on crib safety guidelines, call the Consumer Product Safety Commission at 1-800-638-2772 or visit its website at <http://www.cpsc.gov/en/Safety-Education/Safety-Education-Centers/cribs/>.

Does bed sharing reduce the risk of other sleep-related causes of infant death?

No. Sleeping with a baby in an adult bed increases the chance for overlay or suffocation.

Room sharing—having baby's sleep area in the same room where parents sleep—is less risky than bed sharing because it eliminates the possibility of an adult rolling on to the baby and other similar injuries. It is also recommended by the AAP. Sharing a room with baby allows for easy monitoring and offers many bonding opportunities. It also makes breastfeeding easier.

Mothers who bring baby into their bed to feed should return the infant to a separate sleep area, such as a safety-approved* crib, in their room next to where they sleep.

Can twins and multiples be placed in the same crib or bassinet to sleep?

Twins and higher-order multiples should have separate sleep areas. The potential for overheating and rebreathing is higher among infants who share a bed, increasing the chance of accidental suffocation. In addition, most twins who share a bed are placed on their sides to sleep rather than on the back, putting them at increased risk for SIDS.⁴⁵

Co-bedding twins and higher-order multiples in the hospital setting might encourage parents to continue this practice at home. Therefore, infants should be placed in their own bassinets in the hospital nursery as soon as possible after birth. Parents and caregivers should also be advised to provide separate sleep areas in the home.

* For more information on crib safety guidelines, call the Consumer Product Safety Commission at 1-800-638-2772 or visit its website at <http://www.cpsc.gov/en/Safety-Education/Safety-Education-Centers/cribs/>.

Should crib bumpers be used in the baby's sleep area?

No. Evidence does not support using crib bumpers (sometimes called bumper pads) or similar products that attach to the crib sides or slats to prevent injury. Statistics actually suggest the products may be harmful. A recent study of crib injuries concluded that the risk of suffocation or strangulation from using crib bumpers far outweighed the potential benefits of using them to prevent minor injuries.⁴⁶ In fact, crib bumpers can cause serious injuries and even death. Stricter crib safety standards requiring crib slat spacing to be less than $2 \frac{3}{8}$ inches eliminated the need to use the bumpers to prevent infants from falling through the slats.⁴⁷

Is it safe to put other items in the crib, such as blankets or stuffed toys?

Parents and caregivers should be advised to keep soft objects, toys, and loose bedding out of the infant's sleep area. Loose bedding and other items in the baby's sleep area could end up covering the baby's face. This puts the baby at higher risk for rebreathing air that is low in oxygen and for suffocation or strangulation.⁴⁸ Pillows, quilts, comforters, sheepskins, and other soft items are hazardous when placed under the infant or loose in the infant's sleep area. Research shows that they can increase the risk for SIDS up to fivefold, regardless of the sleep position.

Can swaddling reduce the risk of SIDS?

Research on whether swaddling—wrapping the infant in a light blanket—might reduce the risk for SIDS is inconclusive. Many cultures and nurseries have traditionally used swaddling as a strategy to soothe infants, and in some cases, encourage sleep in the back position. However, statistics clearly show that incorrect swaddling can lead to injury and sometimes death. Studies have found that incorrect swaddling can cause hip and shoulder dysplasia, head covering, and strangulation.⁴⁹ Parents and caregivers should be advised to use caution if they decide to swaddle an infant. Swaddling also does not reduce the necessity to follow other recommended safe sleep practices. The AAP offers guidelines for safe swaddling at <http://www.healthychildren.org/English/ages-stages/baby/diapers-clothing/pages/Swaddling-Is-it-Safe.aspx>.

Does prenatal care play a role in reducing the risk of SIDS?



There is evidence linking a lower risk of SIDS with obtaining regular prenatal care.⁵⁰ Risk of SIDS is particularly increased for women who seek prenatal care late in their pregnancy, that is, in the third trimester, or not at all.⁵¹ Women should seek prenatal care early in the pregnancy and continue to obtain regular prenatal care during the entire pregnancy.

How do smoking during pregnancy and second-hand smoke in the pregnant woman's and infant's environment affect the risk of SIDS?

Smoking during pregnancy and smoke in the infant's environment contribute to an increased SIDS risk.^{52, 53} In fact:

- Infants whose mothers smoke during or after pregnancy are at an overall greater risk of SIDS.⁵⁴
- Infants born to mothers who smoked during pregnancy are twice as likely to die of SIDS.⁵⁵
- Exposure to passive smoke in the household doubles a baby's SIDS risk.⁵⁶

Exactly how smoking during pregnancy and passive smoke in the environment increase SIDS risk is not clear, but smoking may negatively affect development of the fetal nervous system. Studies of the mechanisms underlying the association between smoking and SIDS have found that during the last half of pregnancy changes occur in nicotine-binding sites in the fetal brain stem, specifically in areas involved with arousal from sleep, heart and breathing functions, sleep, and body movement control.⁵⁷ Also, infants whose mothers smoked during pregnancy and who died from SIDS had a higher nicotine concentration in their lung tissue than do infants who did not die from SIDS.⁵⁸ This finding supports the statement that postnatal environmental tobacco smoke exposure plays a role in SIDS risk.^{59,60} However, the mechanism for the association between thirdhand smoke and SIDS is unknown.

Does maternal substance use—smoking, alcohol, and illicit drugs—during pregnancy or after delivery affect SIDS risk?

Evidence shows that women who smoke, drink alcohol, or use illegal drugs during pregnancy or after the baby is born put their infant at increased risk of SIDS. Maternal smoking during pregnancy is a major risk factor in almost every epidemiologic study of SIDS.⁶¹ Similarly, an infant's exposure to alcohol and illicit drugs in the womb increases his or her risk of SIDS. One study of Northern Plains American Indians found that alcohol consumption (particularly binge drinking) during the periconceptional phase and the first trimester were associated with increased SIDS risk.⁶² Another study showed infants were at increased risk for SIDS when their mother used cocaine or other illicit drugs while pregnant.⁶³ For these and other reasons, women should not smoke, drink, or use drugs during pregnancy or after delivery.

Does breastfeeding reduce the risk of SIDS?

Studies show that babies who are breastfed are at lower risk of SIDS than are nonbreastfed babies.^{64, 65, 66} The evidence in these published reports supports the protective role of breastfeeding on SIDS. In one of the cited reports, this protective effect was more pronounced with exclusive breastfeeding.

Physiologic studies show that breastfed infants are more easily aroused from sleep than their formula-fed counterparts, which might explain some of the protective effect of breastfeeding against SIDS.⁶⁷

In addition, breastfeeding offers other health benefits, including decreased incidence of diarrhea, upper and lower respiratory infections, and other infectious diseases, which are associated with an increased susceptibility to SIDS.⁶⁸

The AAP recommends that, unless contraindicated by health problems, women exclusively breastfeed their infants for at least the first 6 months after birth.⁶⁹



Do pacifiers reduce the risk of SIDS?



Yes. Several studies have found that infants who used pacifiers during their last sleep were at significantly lower risk of SIDS compared with infants who did not use pacifiers.^{70, 71} A meta-analysis reinforced findings of the protective effect of pacifiers against SIDS.⁷² The protective effect persists throughout the sleep period, even if the pacifier falls out of the infant's mouth. The exact mechanism for this protective effect is unclear, but lowered sleep arousal thresholds, favorable modification of autonomic control during sleep, and maintaining airway patency during sleep have been proposed.⁷³

The AAP Task Force recommends the use of pacifiers within the following parameters:

- Parents and caregivers should offer the pacifier, but should not force the infant to take it if she or he refuses it.
- Pacifiers should be clean and dry and not coated with anything sweet or sticky.
- Pacifiers should not be attached to infant clothing by a string or tether.
- If the pacifier falls out of the infant's mouth during sleep, there is no need to reinsert it.
- Parents should wait until breastfeeding is well established before introducing a pacifier.

If blankets and other items should not be used in the sleep area, how can parents and caregivers keep their baby warm during sleep?

Babies should be kept warm during sleep, but not too warm. Studies show that an overheated baby is more likely to go into a deep sleep from which it is difficult to arouse.^{74, 75, 76, 77, 78} Some evidence indicates that increased SIDS risk is associated with excessive clothing or blankets and a higher room temperature.

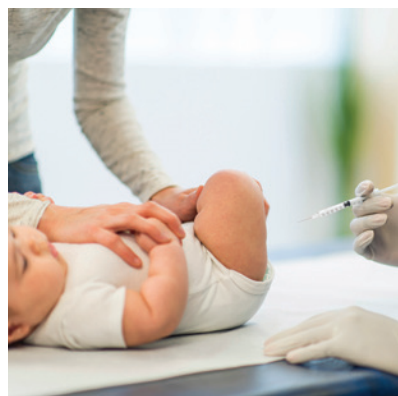
In general, if the room temperature is comfortable for an adult, then it is also warm enough for an infant.⁷⁹ Parents and caregivers should be advised to dress the baby in no more than one layer more of clothing than an adult would wear to be comfortable. Infant sleep clothing, such as a wearable blanket or one-piece sleeper, can be used to keep the baby warm during sleep without using a blanket in the sleep area.

The increased retention of body heat—through excessive insulation from bedding and clothing—can be dangerous for some infants and may contribute to SIDS.^{80, 81} Head covering during sleep is a particular concern. One study found a sevenfold increase in the risk of SIDS associated with head covering.⁸² Studies have also found that overheating may increase the risk of SIDS for a baby who has a cold or infection.⁸³

Do vaccinations have a protective effect against SIDS?

Receiving recommended vaccinations may have a protective effect against SIDS. Some research shows that immunizations reduce the risk of SIDS by 50 percent.⁸⁴ Additional research has shown no causal relationship between immunizations and SIDS.

Advising parents to follow the vaccination schedule and attend all well-baby visits will help ensure infants are immunized and monitored according to AAP and Centers for Disease Control and Prevention recommendations. See the immunization schedule published by the Advisory Committee on Immunization Practices at <http://www.cdc.gov/vaccines/schedules/hcp/child-adolescent.html>.



Can use of products such as wedges and positioners prevent SIDS?

Wedges, positioners, and other devices that claim to be able to prevent SIDS or correctly position infants for sleep are not recommended. These products have not been tested for safety or effectiveness. In fact, the Consumer Product Safety Commission (CPSC) has reports of deaths attributable to accidental suffocation and entrapment associated with wedges and positioning devices. Most of these deaths occurred when infants were placed in the prone or side-lying position with these devices. The infant can roll onto his or her stomach and become trapped and suffocate between the device and side of the crib or bassinet. Also, the infant's movement can cause the nose and mouth to press into or underneath the device, posing a risk for suffocation. This is particularly true for products made with foam rubber or Memory Foam™.

The U.S. Food and Drug Administration, the CPSC, and the AAP warn against using any of these products because of the dangers they pose to babies. To read the warning, visit <http://www.fda.gov/ForConsumers/ConsumerUpdates/ucm227575.htm>.

Does electronic cardiorespiratory monitoring prevent or detect SIDS?

No. Such monitors are not recommended as a strategy for preventing or detecting SIDS.

In the past, health care providers considered the use of cardiorespiratory monitors for reducing SIDS risk in certain groups, such as siblings in families that had previously lost a child from SIDS. However, no national consensus deems this practice as necessary or effective. The NICHD-funded Collaborative Home Infant Monitoring Evaluation (CHIME) study, which used specially designed electronic monitors in the home to detect cardiorespiratory events in infants, raised serious questions about the relationship between SIDS and events detected by home monitors.⁸⁶ For this reason, home monitors are not recommended as a way to reduce the risk of SIDS.

The AAP Task Force supports the conclusions from the CHIME study in recommending against using home monitors as a strategy to prevent SIDS.^{86, 87}

There may still be circumstances in which clinicians will prescribe a home monitor for an infant who has already had a life-threatening event or for those considered at particularly high risk for airway obstruction, such as those with

persistent apnea of prematurity, those with congenital airway malformations, or those who are being positioned prone during sleep for specific medical or surgical reasons. These monitors are not prescribed to prevent or detect SIDS.

Does back sleeping cause positional plagiocephaly or brachycephaly?

Plagiocephaly—a flattened or misshapen head—can occur for various reasons. Positional plagiocephaly results from an infant being placed in the same position (usually on the back) for long periods of time. Brachycephaly (flattening of the back of the skull) may occur along with positional plagiocephaly. The primary causes of positional plagiocephaly and brachycephaly are: Too little time spent upright; too little Tummy Time when the baby is awake and supervised; and too much time in car seats, carriers, and bouncers.

Positional plagiocephaly and brachycephaly are usually harmless and often disappear on their own within the months after babies start to sit up. There is no evidence to suggest that such flat spots are harmful to infants or that they are associated with any permanent effects on head shape.^{88, 89}

Many cases of positional plagiocephaly can be prevented (and sometimes corrected) by repositioning, which relieves pressure from the back of an infant's head.⁹⁰ Techniques for repositioning include:

- Alternating the baby's head position when he or she is placed to sleep so that the baby is not always sleeping on the same side of the head
- Changing the direction the baby faces in the crib every week or so (feet at one end of the crib one week, at the other end of the crib the next week)
- Periodically moving the crib around the room so the infant has to turn his or her head in different directions to see what is going on
- Getting "cuddle time" with the baby by holding him or her upright over one shoulder often during the day
- Limiting the amount of time the baby spends in car seats, carriers, swings, and bouncy seats

In addition, getting ample supervised Tummy Time is also important for reducing the likelihood of positional plagiocephaly.

Positional plagiocephaly is very different from craniosynostosis (premature fusion of the sutures of the skull), congenital muscular torticollis (twisted

neck present at birth), and other types of plagiocephaly. These other types of plagiocephaly often require special molding helmets or surgery to correct.⁹¹

Can babies ever be placed on their stomachs?



Yes. Infants need Tummy Time when they are awake and when someone is watching them. Supervised Tummy Time strengthens muscles in the shoulders and neck that help infants to achieve developmental milestones. It also helps to prevent flat spots on the infant's head.

Health care providers should advise parents and caregivers that a certain amount of Tummy Time is a very important and necessary part of an infant's development. Infants need two or three sessions of supervised Tummy Time every day. Older babies need even more Tummy

Time to help their bodies get ready to sit up, roll over, crawl, and walk. Tummy Time should begin as early as possible to promote motor development, facilitate development of the upper body muscles, and minimize the risk of positional plagiocephaly.⁹²

What advice should health care providers give to parents or caregivers whose infants have difficulty sleeping in the back position?

Although the baby's comfort is important, safety is more important. Parents and caregivers should be advised to place infants on their backs to sleep even if they seem less comfortable or sleep more lightly than when on their stomachs. It is helpful to understand that, compared with infants sleeping on their backs, infants who are placed on their stomachs sleep more deeply, are less reactive to noise, experience less movement, and are less able to arouse from sleep. It is theorized that these factors may put an infant at higher risk of SIDS.

It is true that some infants who lie on their backs do not sleep as deeply as those who lie on their stomachs. Similarly, infants who are placed on their backs to sleep may be fussy or cry. For information you can share with parents about how to help babies get to sleep while on their backs and sleep through the

night, visit <http://www.healthychildren.org/english/ages-stages/baby/sleep/Pages/default.aspx>.

Moreover, while some parents report that using swings or swaddling helps to calm babies, there are no large studies showing efficacy of these practices in reducing the risk of SIDS.⁹³ It also is important to note that swaddling does not reduce the necessity to follow other recommended safe infant sleep practices.



For babies in child care, what advice should health care providers give to parents and caregivers about reducing the risk of SIDS?

Health care providers should strongly recommend that parents and caregivers be especially diligent about making sure infants are placed to sleep on their backs with nothing else in the sleep area, for every sleep time: For naps, at night, **and while in child care**. Consider the following:

- NICHD-supported research and other studies found that infants who are accustomed to sleeping on their backs but who are then placed to sleep on their stomachs or sides are at very high risk of SIDS.⁹⁴ This risk is actually greater than the increased SIDS risk experienced by infants who are always placed on their stomachs or sides to sleep.⁹⁵ If parents and caregivers place an infant to sleep on his or her back at home, but child care providers use a different sleep position, the infant is at significantly higher risk for SIDS.
- In the United States, approximately 20 percent of SIDS deaths occur while the infant is in the care of a child care provider.⁹⁶ This finding is significant, given that more than 61 percent of children younger than 5 years of age are in some type of child care at least some of the time.⁹⁷
- Many child care deaths are associated with the stomach sleep position, especially when the infant is unaccustomed to being placed in that position for sleep.



- Despite the Safe to Sleep® campaign (formerly Back to Sleep) and other SIDS and safe infant sleep awareness campaigns, many child care providers continue to place infants to sleep on their stomachs. Surveys have documented that some secondary caregivers, even licensed child care center workers, are either unaware of or are misinformed about the dangers of placing infants to sleep on their stomachs.⁹⁸
- Although child care providers are more likely to use the back sleep position when centers have written sleep policies, licensed child care centers seldom have such policies.⁹⁹ Studies have found that education programs for child care providers are effective both in increasing knowledge of safe infant sleep positioning and in promoting the development of written policies on sleep position.¹⁰⁰

Based on the evidence, consistency in sleep position is extremely important for reducing the risk of SIDS. It is crucial that parents and caregivers tell everyone who cares for their baby—including grandparents, child care providers, and babysitters—that the infant be placed on his or her back for every sleep time, for naps and at night.

At what age can parents and caregivers stop placing infants on their backs to sleep to reduce the risk of SIDS?

SIDS is defined as the sudden unexplained death of an infant younger than 1 year of age that remains unexplained after a thorough investigation.¹⁰¹ Parents and caregivers should continue to place babies on their backs to sleep until their first birthday.

Statistics indicate that the first 6 months after birth, when infants are forming their sleeping habits, are probably the most important in terms of using the back sleep position to reduce SIDS risk.¹⁰² Research shows that 90 percent of SIDS deaths occur in infants younger than 6 months of age, with a peak between 1 month and 4 months of age.¹⁰³

However, SIDS can occur at any time during an infant's first year, so parents and caregivers should continue to be advised to use back sleeping and other ways to reduce the risk of SIDS and other sleep-related causes of infant death until their baby's first birthday.

Spread the word!

As a health care provider, you have multiple and unique opportunities to share safe infant sleep messages with parents and caregivers to help reduce the risk of SIDS and other sleep-related causes of infant death. Specifically:

- **Always place infants on their backs to sleep.** The back sleep position carries the lowest risk of SIDS.
- **Every sleep time counts.** Infants accustomed to sleeping on their back who are then placed on their stomachs to sleep are at significantly higher risk for SIDS.
- **Sleep surface matters.** Infants who sleep *on top of* an adult bed or *under* soft surfaces (such as blankets or quilts) are at higher risk for SIDS and other sleep-related causes of infant death.

Communities across the nation have made great progress in sharing safe infant sleep messages! With your help, we can spread these important messages to every community in the nation.



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