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Sleep-Related Infant Deaths: Updated 2022 Recommendations for Reducing Infant Deaths in the Sleep Environment

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THE TASK FORCE ON SUDDEN INFANT DEATH SYNDROME AND THE COMMITTEE ON FETUS AND NEWBORN

Each year in the United States, ~3500 infants die of sleep-related infant deaths, including sudden infant death syndrome (SIDS) (International Classification of Diseases, 10th Revision [ICD-10] R95), ill-defined deaths (ICD-10 R99), and accidental suffocation and strangulation in bed (ICD-10 W75). After a substantial decline in sleep-related deaths in the 1990s, the overall death rate attributable to sleep-related infant deaths has remained stagnant since 2000, and disparities persist. The triple risk model proposes that SIDS occurs when an infant with intrinsic vulnerability (often manifested by impaired arousal, cardiorespiratory, and/or autonomic responses) undergoes an exogenous trigger event (eg, exposure to an unsafe sleeping environment) during a critical developmental period. The American Academy of Pediatrics recommends a safe sleep environment to reduce the risk of all sleep-related deaths. This includes supine positioning; use of a firm, noninclined sleep surface; room sharing without bed sharing; and avoidance of soft bedding and overheating. Additional recommendations for SIDS risk reduction include human milk feeding; avoidance of exposure to nicotine, alcohol, marijuana, opioids, and illicit drugs; routine immunization; and use of a pacifier. New recommendations are presented regarding noninclined sleep surfaces, short-term emergency sleep locations, use of cardboard boxes as a sleep location, bed sharing, substance use, home cardiorespiratory monitors, and tummy time. Additional information to assist parents, physicians, and nonphysician clinicians in assessing the risk of specific bed-sharing situations is also included. The recommendations and strength of evidence for each recommendation are included in this policy statement. The rationale for these recommendations is discussed in detail in the accompanying technical report.

abstract

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Drs Moon, Carlin, and Hand approved the final manuscript as submitted and agree to be accountable for all aspects of the work.

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DOI: https://doi.org/10.1542/peds.2022-057990

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PEDIATRICS (ISSN Numbers: Print, 0031-4005; Online, 1098-4275).

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To cite: Moon RY, Carlin RF, Hand I; AAP Task Force on Sudden Infant Death Syndrome; AAP Committee on Fetus and Newborn. Sleep-Related Infant Deaths: Updated 2022 Recommendations for Reducing Infant Deaths in the Sleep Environment. *Pediatrics.* 2022;150(1):e2022057990

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BACKGROUND

Sudden unexpected infant death (SUID) is a term used to describe any sudden and unexpected death, whether explained or unexplained, occurring during infancy (Table 1). After case investigation, it may be determined that an unexpected death was caused by a specific unnatural or natural etiology, such as suffocation, mechanical asphyxia, entrapment, infection, ingestions, metabolic diseases, arrhythmia-associated cardiac channelopathies, or trauma (unintentional or nonaccidental). Unexplained sudden death in infancy (also known as sudden infant death syndrome [SIDS]) is a subcategory of SUID and is a cause assigned to infant deaths that cannot be explained after a thorough case investigation, including a scene investigation, autopsy, and review of the clinical history.[1–3] Unexplained sudden death in infancy, and not SIDS, is the terminology preferred by the National Association of Medical Examiners.[3,4] Because nearly all of the deaths discussed in this policy statement occur during infant sleep or in a sleep environment, this statement (and the accompanying technical report) will use the term sleep-related death (infants implied) to encompass unexplained sudden death in infancy/SIDS and accidental deaths explained by a physical hazard in the sleep environment, except where reference is made to published data that used a specific terminology and definition.

The pathophysiology of sleep-related deaths is complex and multifactorial, with the triple-risk model being the most widely accepted conceptual framework. This model proposes that SIDS occurs when an infant with intrinsic vulnerability (often manifested by impaired arousal, cardiorespiratory, and/or autonomic responses) undergoes an exogenous trigger event (such as exposure to an unsafe sleeping environment) during a critical developmental period.[5] Although research supports various intrinsic anatomic, physiologic, and genetic vulnerabilities in some infants, improved death investigation and systematic reviews of case series have revealed often-modifiable exogenous stressors. The multifactorial nature of many sleep-related deaths can make identification of a single cause of death challenging.

Rates of sleep-related death, like other causes of infant mortality, have notable and persistent racial and ethnic disparities,[6] reflecting broader racial and ethnic societal inequities. Mortality rates for non-Hispanic Black and American Indian/Alaska Native infants have decreased more slowly than rates for other infants. Differences in the prevalence of supine positioning and other sleep environment conditions among different racial and ethnic populations may contribute to these disparities.[7] Factors that result in the marginalization of infants and their families, including low socioeconomic status or low socioeconomic position, unemployment, housing instability, and domestic violence, are highly correlated with race/ethnicity in the United States,[8] and are also associated with both higher risk of sleep-related deaths[9] and increased prevalence of known risk factors for these deaths.[10] Addressing the potential impact of structural racism; recognizing the lack of access to economic, social, and educational resources as a risk

TABLE 1 Definitions of Terms

Accidental strangulation or suffocation in bed: An explained sudden and unexpected infant death in a sleep environment (bed, crib, couch, chair, etc) in which the infant's nose and mouth are obstructed or the neck or chest is compressed from soft or loose bedding, an overlay, or wedging causing asphyxia. Corresponds to ICD-10 W75.
Bed sharing: Parent(s) and infant sleeping together on any surface (bed, couch, chair). Medical examiners prefer the term "surface sharing."
Caregivers: Throughout the document, "parents" are used, but this term is meant to indicate any infant caregivers.
Cosleeping: This term is commonly used in other publications and is not recommended because it lacks clarity, being variably used for sleeping in close proximity (eg, room sharing) and/or sleep surface/bed sharing.
Room sharing: Parent(s) and infant sleeping in the same room on separate surfaces.
SIDS: Cause assigned to infant deaths that cannot be explained after a thorough case investigation, including a death scene investigation, autopsy, and review of the clinical history.
Sleep-related infant death: A sudden, unexpected infant death that occurs during an observed or unobserved sleep period, or in a sleep environment.
Unexplained sudden death in infancy or SIDS: The sudden unexpected death of an apparently healthy infant aged <1 y, in which investigation, autopsy, medical history review, and appropriate laboratory testing fail to identify a specific cause, including cases that meet the definition of SIDS.[2] The panel of experts representing the National Association of Medical Examiners recommends the use of unexplained sudden death in infancy and not SIDS.[3]
SUID: A sudden and unexpected death, whether explained or unexplained (including SIDS), occurring during infancy. Defined by the National Center for Health Statistics to mean deaths with an underlying cause code of ICD-10 R95, R99, or W75.[158]
Surface sharing: Parent(s) and infant sleeping together on any surface. Medical examiners prefer surface sharing over bed sharing.
Wedging or entrapment: A form of suffocation or mechanical asphyxia in which the nose and mouth or thorax is compressed or obstructed because of the infant being trapped or confined between inanimate objects, preventing respiration.[159] A common wedging scenario is an infant stuck between a mattress and a wall (or a bedframe) in an adult bed.

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factor; working closely with communities to identify possible unknown risk factors; and engaging health care and public health professionals in thoughtful and respectful conversations with families about safe infant sleep will be important in improving understanding of the most effective strategies to promote adoption of safe infant sleep practices among various populations.

The recommendations outlined herein were developed to reduce the risk of sleep-related death. Table 2 summarizes each recommendation and provides the strength of the recommendation, which is based on the strength-of-recommendation taxonomy.[11] It should be noted that, because there are no randomized controlled trials with regard to SIDS and other sleep-related deaths, case-control studies are the best evidence available. Table 3 lists changes in the 2021 recommendations.

The recommendations are based on studies that include infants aged up to 1 year. Therefore, recommendations for sleep position and the sleep environment, unless otherwise specified, are for the first year after birth. When discussing sleep practices, physicians and nonphysician clinicians are encouraged to have open and nonjudgmental conversations with families and others who care for infants. Individual medical conditions may warrant that a clinician recommend otherwise after weighing the relative risks and benefits.

The guidance in this policy statement is intended to be inclusive of all families. Gendered language is used occasionally, such as "mothers" and "breastfeeding," particularly when discussing or quoting published articles that used these terms.[12] However, we acknowledge that parents may be of any gender and that transgender men and nonbinary-gendered individuals may also give birth and/or may want to breastfeed or feed at the chest.

For the search strategy and methodology, background literature review, and data analyses on which this policy statement and recommendations are based, refer to

TABLE 2 Summary of Recommendations With Strength of Recommendation

A level recommendations:
Back to sleep for every sleep.
Use a firm, flat, noninclined sleep surface to reduce the risk of suffocation or wedging/entrapment.
Feeding of human milk is recommended because it is associated with a reduced risk of SIDS.
It is recommended that infants sleep in the parents' room, close to the parents' bed, but on a separate surface designed for infants, ideally for at least the first 6 mo.
Keep soft objects, such as pillows, pillow-like toys, quilts, comforters, mattress toppers, fur-like materials, and loose bedding, such as blankets and nonfitted sheets, away from the infant's sleep area to reduce the risk of SIDS, suffocation, entrapment/wedging, and strangulation.
Offering a pacifier at naptime and bedtime is recommended to reduce the risk of SIDS.
Avoid smoke and nicotine exposure during pregnancy and after birth.
Avoid alcohol, marijuana, opioids, and illicit drug use during pregnancy and after birth.
Avoid overheating and head covering in infants.
It is recommended that pregnant people obtain regular prenatal care.
It is recommended that infants be immunized in accordance with guidelines from the AAP and CDC.
Do not use home cardiorespiratory monitors as a strategy to reduce the risk of SIDS.
Supervised, awake tummy time is recommended to facilitate development and to minimize the risk of positional plagiocephaly. Parents are encouraged to place the infant in tummy time while awake and supervised for short periods of time beginning soon after hospital discharge, increasing incrementally to at least 15 to 30 min total daily by age 7 wk.
It is essential that physicians, nonphysician clinicians, hospital staff, and child care providers endorse and model safe infant sleep guidelines from the beginning of pregnancy.
It is advised that media and manufacturers follow safe sleep guidelines in their messaging and advertising to promote safe sleep practices as the social norm.
Continue the NICHD "Safe to Sleep" campaign, focusing on ways to reduce the risk of all sleep-related deaths. Pediatricians and other maternal and child health providers can serve as key promoters of the campaign messages.
B level recommendations:
Avoid the use of commercial devices that are inconsistent with safe sleep recommendations.
C level recommendations:
There is no evidence to recommend swaddling as a strategy to reduce the risk of SIDS.
Continue research and surveillance on the risk factors, causes, and pathophysiological mechanisms of sleep-related deaths, with the ultimate goal of eliminating these deaths entirely.

Based on the strength-of-recommendation taxonomy for assignment of letter grades to each of its recommendations (A, B, C)[11]: level A, the recommendation is on the basis of consistent, good-quality, patient-oriented evidence; level B, the recommendation is on the basis of inconsistent or limited-quality, patient-oriented evidence; level C, the recommendation is on the basis of consensus, usual practice, opinion, disease-oriented evidence, or case series for studies of diagnosis, treatment, prevention, or screening. Patient-oriented evidence measures outcomes that matter to patients: morbidity, mortality, symptom improvement, cost reduction, and quality of life. Disease-oriented evidence measures immediate, physiologic, or surrogate end points that may or may not reflect improvements in patient outcomes (eg, blood pressure, blood chemistry, physiologic function, pathologic findings). NICHD, Eunice Kennedy Shriver National Institute of Health and Human Development.

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TABLE 3 Safe Sleep Guidelines That Have Been Substantially Revised Since 2016

Topic	2016 Guidelines	Revised 2022 Guidelines
Sleep surface	Use a firm sleep surface.	Use a firm, flat, noninclined sleep surface. Sleep surfaces with inclines of >10 degrees are unsafe for infant sleep. Some American Indian/Alaska Native communities have promoted the use of cradleboards as an infant sleep surface. There are no data regarding the safety of cradleboards for sleep, but the NICHD suggests cradleboards as a culturally appropriate infant sleep surface. Care should be taken so that infants do not overheat (because of overbundling) in the cradleboard. At a minimum, to be considered a safe option, any alternative sleep surface should adhere to the June 2021 CPSC rule that any infant sleep product must meet existing federal safety standards for cribs, bassinets, play yards, and bedside sleepers. This includes inclined sleep products, hammocks, baby boxes, in-bed sleepers, baby nests and pods, compact bassinets without a stand or legs, travel bassinets, and baby tents. Products that do not meet the federal safety standard are likely not safe for infant sleep, and their use is not recommended. In an emergency, an alternative device with a firm, flat, noninclined surface (eg, box, basket, or dresser drawer) with thin, firm padding may be used temporarily. However, this alternative device should be replaced as soon as a CPSC-approved surface is available.
Breastfeeding	Breastfeeding is associated with a reduced risk of SIDS. Unless contraindicated, mothers should breastfeed exclusively or feed with expressed milk (ie, not offer any formula or other nonhuman milk-based supplements) for 6 mo, in alignment with recommendations of the AAP.	Feeding of human milk is recommended because it is associated with a reduced risk of SIDS. Unless it is contraindicated or the parent is unable to do so, it is recommended that infants be fed with human milk (ie, not offered any formula or other nonhuman milk-based supplements) exclusively for ~6 mo, with continuation of human milk feeding for 1 y or longer as mutually desired by parent and infant, in alignment with recommendations of the AAP. Because preterm and low birth weight infants are at higher risk of dying from SIDS, it is particularly important to emphasize the benefits of human milk, engage with families to understand the barriers and facilitators to provision of human milk, and provide more intensive assistance during prolonged NICU hospitalization for these groups. Some parents are unable to or choose not to feed human milk. When discussing breastfeeding, culturally appropriate, respectful, and nonjudgmental communication between health care professionals and parents is recommended. These families should still be counseled on the importance of following the other safe sleep recommendations.
Sleep location	It is recommended that infants sleep in the parents' room, close to the parents' bed, but on a separate surface designed for infants, ideally for the first year of life, but at least for the first 6 mo. There are specific circumstances that, in case-control studies and case series, have been shown to substantially increase the risk of SIDS or unintentional injury or death while bed sharing, and these should be avoided at all times:	It is recommended that infants sleep in the parents' room, close to the parents' bed, but on a separate surface designed for infants, ideally for at least the first 6 mo. The AAP understands and respects that many parents choose to routinely bed share for a variety of reasons, including facilitation of breastfeeding, cultural preferences, and belief that it is better and safer for their infant. However, based on the

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TABLE 3 Continued

Topic	2016 Guidelines	Revised 2022 Guidelines
	• Bed sharing with a term normal weight infant aged <4 mo and infants born preterm and/or with low birth weight, regardless of parental smoking status. Even for breastfed infants, there is an increased risk of SIDS when bed sharing if aged <4 mo. This appears to be a particularly vulnerable time, so if parents choose to feed their infants aged <4 mo in bed, they should be especially vigilant to not fall asleep. • Bed sharing with a current smoker (even if he or she does not smoke in bed) or if the mother smoked during pregnancy. • Bed sharing with someone who is impaired in his or her alertness or ability to arouse because of fatigue or use of sedating medications (eg, certain antidepressants, pain medications) or substances (eg, alcohol, illicit drugs). • Bed sharing with anyone who is not the infant's parent, including nonparental caregivers and other children. • Bed sharing on a soft surface, such as a waterbed, old mattress, sofa, couch, or armchair. • Bed sharing with soft bedding accessories, such as pillows or blankets.	evidence, we are unable to recommend bed sharing under any circumstances. Having the infant close by their bedside in a crib or bassinet will allow parents to feed, comfort, and respond to their infant's needs. It is also important for parents, pediatricians, other physicians, and nonphysician clinicians to know that the following factors increase the magnitude of risk when bed sharing or surface sharing: More than 10 times the baseline risk of parent–infant bed sharing: • Bed sharing with someone who is impaired in their alertness or ability to arouse because of fatigue or use of sedating medications (eg, certain antidepressants, pain medications) or substances (eg, alcohol, illicit drugs). • Bed sharing with a current smoker (even if the smoker does not smoke in bed) or if the pregnant parent smoked during pregnancy. • Bed sharing on a soft surface, such as a waterbed, old mattress, sofa, couch, or armchair. 5–10 times the baseline risk of parent–infant bed sharing: • Term, normal weight infant aged <4 mo, even if neither parent smokes and even if the infant is breastfed. This is a particularly vulnerable time, so parents who choose to feed their infants aged <4 mo in bed need to be especially vigilant to avoid falling asleep. • Bed sharing with anyone who is not the infant's parent, including nonparental caregivers and other children. 2–5 times the baseline risk of parent–infant bed sharing: • Preterm or low birth weight infant, even if neither parent smokes. • Bed sharing with soft bedding accessories, such as pillows or blankets.
	The safest place for a baby to sleep is on a separate sleep surface designed for infants close to the parents' bed. However, the AAP acknowledges that parents frequently fall asleep while feeding the infant. Evidence suggests that it is less hazardous to fall asleep with the infant in the adult bed than on a sofa or armchair, should the parent fall asleep.	Bed sharing can occur unintentionally if parents fall asleep while feeding their infant, or at times when parents are particularly tired or infants are fussy. Evidence suggests that it is relatively less hazardous (but still not recommended) to fall asleep with the infant in the adult bed than on a sofa or armchair, should the parent fall asleep.
	The safety and benefits of cobedding for twins and higher-order multiples have not been established.	Any potential benefits of cobedding for twins and higher-order multiples are outweighed by the risk of cobedding.
Soft bedding		It is recommended that weighted blankets, weighted sleepers, weighted swaddles, or other weighted objects not be placed on or near the sleeping infant.
	Infant sleep clothing, such as a wearable blanket, is preferable to blankets and other coverings to keep the infant warm while reducing the chance of head covering or entrapment that could result from blanket use.	Dressing the infant with layers of clothing is preferable to blankets and other coverings to keep the infant warm while reducing the chance of head covering or entrapment that could result from blanket use. Wearable blankets can also be used.

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TABLE 3 Continued

Topic	2016 Guidelines	Revised 2022 Guidelines
Pacifier use	For breastfed infants, pacifier introduction should be delayed until breastfeeding is firmly established.	For breastfed infants, delay pacifier introduction until breastfeeding is firmly established. This is defined as having sufficient milk supply; consistent, comfortable, and effective latch for milk transfer; and appropriate infant weight gain as defined by established normative growth curves. The time required to establish breastfeeding is variable.
Prenatal and postnatal exposure to tobacco, alcohol, and other substances	Avoid smoke exposure during pregnancy and after birth.	Avoid smoke and nicotine exposure during pregnancy and after birth.
	Avoid alcohol and illicit drug use during pregnancy and after birth.	Avoid alcohol, marijuana, opioids, and illicit drug use during pregnancy and after birth.
Overheating and head covering		Given the questionable benefit of hat use for the prevention of hypothermia and the risk of overheating, it is advised not to place hats on infants when indoors except in the first hours of life or in the NICU.
Use of home cardiorespiratory monitors	There are no data that other commercial devices that are designed to monitor infant vital signs reduce the risk of SIDS.	Direct-to-consumer heart rate and pulse oximetry monitoring devices, including wearable monitors, are sold as consumer wellness devices. A consumer wellness device is defined by the FDA as one intended "for maintaining or encouraging a healthy lifestyle and is unrelated to the diagnosis, cure, mitigation, prevention, or treatment of a disease or condition." Thus, these devices are not required to meet the same regulatory requirements as medical devices and, by the nature of their FDA designation, are not to be used to prevent sleep-related deaths. Although use of these monitors may give parents peace of mind, and there is no contraindication to using these monitors, data are lacking that would support their use to reduce the risk of these deaths. There is also concern that use of these monitors will lead to parent complacency and decreased adherence to safe sleep guidelines. A family's decision to use monitors at home should not be considered a substitute for following AAP safe sleep guidelines.
Tummy time	Although there are no data to make specific recommendations as to how often and how long it should be undertaken, the AAP reiterates its previous recommendation that "a certain amount of prone positioning, or 'tummy time,' while the infant is awake and being observed is recommended to help prevent the development of flattening of the occiput and to facilitate development of the upper shoulder girdle strength necessary for timely attainment of certain motor milestones."	Parents are encouraged to place the infant in tummy time while awake and supervised for short periods of time beginning soon after hospital discharge, increasing incrementally to at least 15–30 min total daily by age 7 wk.
Swaddling		Weighted swaddle clothing or weighted objects within swaddles are not safe and therefore not recommended.
	When an infant exhibits signs of attempting to roll, swaddling should no longer be used.	When an infant exhibits signs of attempting to roll (which usually occurs at 3–4 mo but may occur earlier), swaddling is no longer appropriate because it could increase the risk of suffocation if the swaddled infant rolls to the prone position

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TABLE 3 Continued

Topic	2016 Guidelines	Revised 2022 Guidelines
Health professionals and child care providers	Health care professionals, staff in newborn nurseries, and child care providers should endorse and model the SIDS risk reduction recommendations from birth.	It is essential that physicians, nonphysician clinicians, hospital staff, and child care providers endorse and model safe infant sleep guidelines from the beginning of pregnancy.
Media and manufacturers	Media and manufacturers should follow safe sleep guidelines in their messaging and advertising.	It is advised that media and manufacturers follow safe sleep guidelines in their messaging, advertising, production, and sales to promote safe sleep practices as the social norm.
Education		Culturally appropriate, respectful, and nonjudgmental communication between clinicians and parents is important when discussing safe infant sleep. Language interpreters should be used as needed. Education that is integrated with other health messaging, such as discussion of the risk of falls and potential skull fractures if infants fall from an adult's arms or a sleep surface, can be helpful. Strategies to avoid inadvertent bed sharing could include setting of alarms or alternative activities (books, television shows, etc) to avoid falling asleep. Education campaigns need to be well funded, strategically implemented, and evaluated, and innovative, socioculturally appropriate intervention methods need to be encouraged and funded.
Research and surveillance		Research on the social determinants of health, health care delivery system inequalities, and the impact of structural racism and implicit bias as related to health care access, education, and outcomes that contribute to health disparities, and understanding how to best address these disparities in a socioculturally appropriate manner, should be continued and funded. It is important to provide training for hospital personnel in the evaluation and response when an infant who has been found unresponsive and has potentially died suddenly and unexpectedly is brought for medical attention in the emergency department or other medical facilities, as well as information about how to support families during this difficult time.

This table does not reflect all of the safe sleep guidelines but only those portions of the guidelines that have been substantially revised. NICHD, Eunice Kennedy Shriver National Institute of Health and Human Development.

the accompanying technical report, "Evidence Base for 2022 Updated Recommendations for a Safe Infant Sleeping Environment to Reduce the Risk of Sleep-Related Infant Deaths".[13]

RECOMMENDATIONS TO REDUCE THE RISK OF SLEEP-RELATED INFANT DEATHS

1. Back to sleep for every sleep. To reduce the risk of sleep-related death, it is recommended that infants be placed for sleep in a supine (back) position for every sleep by every caregiver until the child reaches 1 year of age.[14–18] Side sleeping is not safe and is not advised.[15,17]
   a. The supine sleep position on a flat, noninclined surface does not increase the risk of choking and aspiration in infants and is recommended for every sleep, even for infants with gastroesophageal reflux (GER). The infant airway anatomy and protective mechanisms (eg, gag reflex) protect against aspiration[19,20] (see Fig 1 and video [https://www.youtube.com/watch?v=zm0YQbAsDnk], both of which may be helpful in educating parents and caregivers). The American Academy of Pediatrics (AAP) concurs with the North American Society for Pediatric Gastroenterology and Nutrition that " … no position other than supine position is recommended for infants because of the risk of SIDS." Further, "the working group recommends

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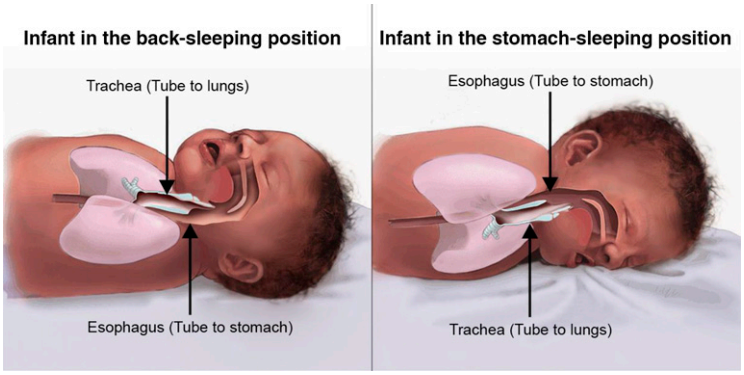

FIGURE 1

Back sleeping does not increase the risk of choking. In fact, infants may be better able to clear fluids when they are on their backs, possibly because of anatomy. When an infant is in the back-sleeping position, the trachea lies on top of the esophagus. Anything regurgitated or refluxed from the esophagus must work against gravity to be aspirated into the trachea. When an infant is in the stomach-sleeping position, anything regurgitated or refluxed will pool at the opening of the trachea, making it easier for the infant to aspirate or choke. Image and caption courtesy of the Safe to Sleep campaign, for educational purposes only; Eunice Kennedy Shriver National Institute of Child Health and Human Development, http://www.nichd.nih.gov/sids. Safe to Sleep is a registered trademark of the United States Department of Health and Human Services.

not to use positional therapy (ie, head elevation, lateral and prone positioning) to treat symptoms of gastroesophageal reflux disease (GERD) in sleeping infants."[21] There is no evidence to suggest that infants receiving nasogastric or orogastric feeds are at increased risk for aspiration if placed in the supine position. Elevating the head of the infant's crib is ineffective in reducing GER[22,23] and is not recommended. Infants cannot be placed at a 30-degree incline without sliding down,[24] which raises concern that the infant could slide into a position that may compromise respiration. Infants sleeping at lesser inclines can more easily flex their trunk and lift their head, facilitating rolling onto the side or prone, at which point they are at higher risk for muscle fatigue and potential suffocation.[24]

b. Hospitalized preterm infants should be placed supine as soon as clinical status has stabilized and they have achieved positional stability, that is, when therapeutic or nonsupine positioning is no longer medically indicated. This milestone is usually achieved by 32 weeks' gestational age as the infant's flexion tone and strength develop. Given the higher SUID risk[25–27] and the strong association between prone sleep position and SIDS[28] among preterm and low birth weight infants, supine positioning for every sleep should be modeled in the NICU when infants are medically stable. The AAP reiterates its previous recommendation that:
   1. "preterm infants should be placed supine for sleeping, just as term infants should, and the parents of preterm infants should be counseled about the importance of supine sleeping in preventing SIDS. Hospitalized preterm infants should be kept predominantly in the supine position, at least from the postmenstrual age of 32 weeks onward, so that they become acclimated to supine sleeping before discharge"[29]; and
   2. even among preterm infants with GER, "safe sleep approaches, including supine positioning on a flat and firm surface and avoidance of commercial devices designed to maintain head elevation in the crib, should be paramount as a model for parents of infants approaching discharge (ie, infants >32 weeks' postmenstrual age) from the hospital."[30]

   NICU personnel should endorse safe sleeping guidelines with parents of infants from the time of admission to the NICU. (Additional details are available in the AAP clinical report "Transition to a Safe Home Sleep Environment for the NICU Patient."[31])

c. During the birth hospitalization, place healthy, newborn infants supine and on a flat, noninclined surface for every sleep when they are not engaged in skin-to-skin care or in the arms of an awake/alert individual. As stated in the AAP clinical report on safe sleep and skin-to-skin care, "skin-to-skin care is recommended for all mothers and newborns, regardless of feeding or delivery method, immediately after birth (as soon as the mother is medically stable, awake, and able to respond to her newborn), and to continue for at least an hour."[32] Thereafter, or when the parent needs to sleep or take care of other needs, infants should be placed supine in a noninclined

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bassinet. There is no evidence that placing infants on their side during the first few hours after delivery promotes clearance of amniotic fluid or decreases the risk of aspiration. Infants who are rooming in with their parents or cared for in a separate newborn nursery should be placed in the supine position for sleep in a noninclined bassinet when not engaged in skin-to-skin care.

d. Infants who can roll from supine to prone and from prone to supine can be allowed to remain in the sleep position that they assume. Although data to make specific recommendations as to when it is safe for infants to sleep in the prone or side position are lacking, studies establishing prone and side sleeping as risk factors for SIDS include infants aged up to 1 year. Therefore, the best evidence suggests that infants should continue to be placed supine until aged 1 year. Because rolling into soft bedding is an important risk factor for sleep-related death,[33,34] an infant's sleep environment should be clear of everything but a fitted sheet.

2. Use a firm, flat, noninclined sleep surface to reduce the risk of suffocation or wedging/entrapment.
   a. Place infants on a firm, flat, noninclined sleep surface (eg, tightly fitting crib mattress in a safety-approved crib) covered by a fitted sheet with no other bedding or soft objects. Sleep surfaces with inclines of more than 10 degrees are unsafe for infant sleep.[24]
   b. A firm surface maintains its shape and does not indent or conform to the shape of the infant's head when the infant is placed on the surface. The surface does not change its shape when the fitted sheet designated for that model is used, such that there are no gaps between the mattress and the wall of the crib, bassinet, portable crib, or play yard.
   c. Only use mattresses designed for the specific product. Pillows or cushions are not appropriate for use as mattress substitutes or in addition to a mattress. Mattress toppers, designed to make the sleep surface softer, are not appropriate for use with infants aged <1 year. If a mattress cover is used to protect against wetness, it should be tightly fitting and thin. Nothing (wedges, pillows, etc) should be placed under or over the mattress to elevate the infant off the mattress or create an angled sleep surface. This strategy is ineffective in reducing GER,[21] and it is not recommended to relieve symptoms of an upper respiratory infection, regardless of symptom severity.
   d. Soft mattresses, including those with adjustable firmness or those made from memory foam, could create a pocket (or indentation) and increase the chance of rebreathing or suffocation if the infant is placed or rolls over to the prone position.[35,36] Many mattresses intended for use by older children or adults contain memory foam or have adjustable firmness. The use of mattresses that are soft, adjustable, or with memory foam is dangerous for infants.
   e. A crib, bassinet, portable crib, or play yard that conforms to the safety standards of the Consumer Product Safety Commission (CPSC) is recommended.[37] In addition, parents and providers should check the CPSC website (www.cpsc.gov) to ensure that the product has not been recalled. This is particularly important for used cribs. Cribs with missing hardware or missing instructions should not be used, nor should parents or providers attempt to fix broken components of a crib, because many deaths have occurred in cribs that were broken or with missing parts (including those that had presumably been fixed).
   f. Local organizations throughout the United States help provide low-cost or free cribs or play yards for families with financial constraints.
   g. In June 2021, the CPSC passed a rule that any sleep products for infants aged 5 months and younger (defined as any product with packaging, marketing, or instructions indicating that the product is for sleep or naps, or with any images of sleeping infants) must meet the existing federal safety standards for cribs, bassinets, play yards, and bedside sleepers.[38] This includes inclined sleep products, hammocks, cardboard boxes, in-bed sleepers, baby nests and pods, compact bassinets without a stand or legs, travel bassinets, and baby tents. There is inadequate published evidence to recommend for or against the use of any of these alternative sleep surfaces. At a minimum, to be considered a safe option, any alternative sleep surface should adhere to the June 2021 CPSC rule that any infant sleep product must meet existing federal safety standards for cribs, bassinets, play yards, and bedside sleepers. Products that do not

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meet the federal safety standard are likely not safe for infant sleep, and the AAP does not recommend their use. Regardless of sleep surface, the AAP recommends supine positioning; use of a firm, noninclined sleep surface without padded sides; and avoidance of soft objects and loose bedding.

h. Some American Indian/Alaska Native communities have promoted the use of cradleboards as an infant sleep surface. There are no data regarding the safety of cradleboards for sleep, but the Eunice Kennedy Shriver National Institute of Health and Human Development-led Healthy Native Babies Project suggests cradleboards as a culturally appropriate infant sleep surface.[39] Care should be taken so that infants do not overheat (because of overbundling) in the cradleboard.

i. There is no evidence that special crib mattresses and sleep surfaces claiming to reduce the chance of rebreathing carbon dioxide when the infant is in the prone position reduce the risk of a sleep-related death. However, there is no disadvantage to using these mattresses if they meet the safety standards as described previously.

j. Infants should not be placed for sleep on adult-sized beds or mattresses because of the risk of entrapment and suffocation.[40,41] In addition, portable bed rails should not be used with infants because of the risk of entrapment and strangulation.

k. The infant sleep area should be kept free of hazards, such as dangling cords, electric wires, and window covering cords, because these may present a strangulation risk.

l. Sitting devices, such as car seats, strollers, swings, infant carriers, and infant slings, are not recommended for routine sleep in the hospital or at home, particularly for infants aged <4 months.[42–47] When infants fall asleep in a sitting device, remove them from the product and move them to a crib or other appropriate flat surface as soon as is safe and practical. Car seats and similar products are not stable on a crib mattress or other elevated surfaces.[48–52] Do not leave infants unattended in car seats and similar products, and do not place or leave infants in car seats and similar products with the straps unbuckled or partially buckled.[47]

m. When infant slings and cloth carriers are used for carrying, it is important to ensure that the infant's head is up and above the fabric, the face is visible, and the nose and mouth are clear of obstructions.[53] If the infant's head is covered to facilitate nursing, the infant should be repositioned in the sling after feeding so that the head is up, is clear of fabric, and is not against the adult's body or the sling.

n. Short-term emergency situations: There may be personal (house fire, eviction) or regional (hurricane, earthquake) disasters that result in displacement with a lack of access to an approved safe sleep device/surface. In an emergency, an alternative device with a firm, flat, noninclined surface (eg, box, basket, or dresser drawer) with thin, firm padding may be used temporarily. However, this alternative device should be replaced as soon as a CPSC-approved surface is available. The device should contain no pillows or loose or soft objects. Government-regulated shelters should have an adequate number of CPSC-approved sleep surfaces to support their client population. Social service agencies and emergency assistance organizations should provide resources for free or low-cost CPSC-approved surfaces.

3. Feeding of human milk is recommended, as it is associated with a reduced risk of SIDS.

   a. Breastfeeding is associated with a reduced risk of SIDS.[54–56] Unless it is contraindicated or the parent is unable to do so, it is recommended that infants be fed with human milk (ie, not offered any formula or other nonhuman milk-based supplements) exclusively for ~6 months, with continuation of human milk feeding for 1 year or longer as mutually desired by parent and infant, in alignment with recommendations of the AAP.[57]

   b. The risk-reducing effect of human milk feeding increases with exclusivity.[56] Furthermore, any human milk feeding is more protective against SIDS than none,[56] and the protective effect increases with longer duration of human milk feeding.[58]

   c. Because preterm and low birth weight infants are at higher risk of dying from SIDS,[59] it is particularly important to emphasize the benefits of human milk, engage with families to understand the barriers and facilitators to provision of human milk, and provide more intensive assistance during

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prolonged NICU hospitalization for these groups.

d. Some parents are unable to or choose not to feed human milk. When discussing feeding practices, culturally appropriate, respectful, and nonjudgmental communication between clinicians and parents is recommended. These families should still be counseled on the importance of following the other safe sleep recommendations.

4. It is recommended that infants sleep in the parents' room, close to the parents' bed, but on a separate surface designed for infants, ideally for at least the first 6 months. There is evidence that sleeping in the parents' room but on a separate surface decreases the risk of SIDS by as much as 50%.[16,18,60,61] In addition, this arrangement is most likely to prevent suffocation, strangulation, and entrapment that may occur when the infant is sleeping in the adult bed.
   a. Place the infant's crib, portable crib, play yard, or bassinet in the parents' bedroom, ideally for at least the first 6 months. Room sharing without bed sharing is protective for the first year of life, and there is no specific evidence for when it might be safe to move an infant to a separate room before 1 year of age. However, the rates of sleep-related deaths are highest in the first 6 months, so room sharing during this vulnerable period is especially important. Placing the crib close to the parents' bed so that the infant is within view and within arms' reach can facilitate feeding, comforting, and monitoring of the infant to give parents peace of mind about their infant's safety. This arrangement also reduces SIDS risk and removes the possibility of suffocation, strangulation, and entrapment that may occur when the infant is sleeping in the adult bed.
   b. There is insufficient evidence to recommend for or against the use of devices promoted to make bed sharing "safe." At a minimum, to be considered a safe option, any of these devices should adhere to the June 2021 CPSC rule that any infant sleep product must meet existing federal safety standards for cribs, bassinets, play yards, and bedside sleepers.[38] (See section 2g above.)
   c. Return infants who are brought into the adult bed for feeding or comforting to their own crib or bassinet when the parent is ready to return to sleep.[17,62]
   d. Couches and armchairs are extremely dangerous places for infants and should never be used for infant sleep. Sleeping on couches and armchairs places infants at extraordinarily high risk (with 22- to 67-fold increased risk) for infant death, including SIDS,[14,16,17,61,62] suffocation through entrapment or wedging between seat cushions, or overlay if another person is also sharing this surface.[63] Therefore, parents and other caregivers need to be especially vigilant as to their wakefulness when feeding infants or lying with infants on these surfaces.
   e. The safest place for a baby to sleep is on a separate sleep surface designed for infants close to the parents' bed. Infants sleeping in a separate room are 2.75 to 11.5 times more likely to die suddenly and unexpectedly than infants who are room sharing without bed sharing.[16,60,64] When all bed-sharing or surface-sharing circumstances are included in meta-analyses, the risk of dying suddenly and unexpectedly is almost 3 times higher than room sharing without bed sharing.[65]
   f. The AAP understands and respects that many parents choose to routinely bed share for a variety of reasons, including facilitation of breastfeeding, cultural preferences, and a belief that it is better and safer for their infant. However, on the basis of the evidence,[66] the AAP is unable to recommend bed sharing under any circumstances. Having the infant close by their bedside in a crib or bassinet will allow parents to feed, comfort, and respond to their infant's needs. It is also important for parents, pediatricians, other physicians, and nonphysician clinicians to know that the following factors increase the magnitude of risk when bed sharing or surface sharing:
      i. More than 10 times the baseline risk of parent–infant bed sharing:
         - Bed sharing with some one who is impaired in their alertness or ability to arouse because of fatigue or use of sedating medications (eg, certain antidepressants, pain medications) or substances (eg, alcohol, illicit drugs).[18,66–68]
         - Bed sharing with a current smoker (even if the smoker does not smoke

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in bed) or if the pregnant parent smoked during pregnancy.[16,17,65,69,70]
- Bed sharing on a soft surface, such as a waterbed, old mattress, sofa, couch, or armchair.[14,16,17,61,62]

ii. 5 to 10 times the baseline risk of parent–infant bed sharing:
- Term, normal weight infant aged <4 months, even if neither parent smokes and even if the infant is breastfed.[16,18,61,62,65,66,71] This is a particularly vulnerable time, so parents who choose to feed their infants aged <4 months in bed need to be especially vigilant to avoid falling asleep.
- Bed sharing with anyone who is not the infant's parent, including nonparental caregivers and other children.[14]

iii. 2 to 5 times the baseline risk of parent–infant bed sharing:
- Preterm or low birth weight infant, even if neither parent smokes.[59]
- Bed sharing with soft bedding accessories, such as pillows or blankets.[14,72]

Pediatricians, other physicians, and nonphysician clinicians are encouraged to counsel all families on these factors that can substantially increase the risk of sleep-related death while bed sharing.

g. Bed sharing can occur unintentionally if parents fall asleep while feeding their infant or at times when parents are particularly tired or infants are fussy. Evidence suggests that it is relatively less hazardous (but still not recommended) to fall asleep with the infant in the adult bed than on a sofa or armchair, should the parent fall asleep.[14,16,17,61,62] It is important to note that a large percentage of infants who die while bed sharing are found with their face or head covered by bedding.[73] Therefore, it is advised that no pillows, sheets, blankets, pets, or other soft or loose items that could obstruct infant breathing or cause overheating be in the bed. Because there is evidence that the risk of bed sharing is higher with longer duration,[17,62] if the parent falls asleep while feeding the infant in bed, parents are advised to return the infant to a separate sleep surface as soon as the parent awakens.

h. Any potential benefits of cobedding for twins and higher-order multiples are outweighed by the risk of cobedding. It is prudent to provide separate sleep surfaces and avoid cobedding for twins and higher-order multiples in the hospital and at home.[74]

5. Keep soft objects, such as pillows, pillow-like toys, quilts, comforters, mattress toppers, fur-like materials, and loose bedding, such as blankets and nonfitted sheets, away from the infant's sleep area to reduce the risk of SIDS, suffocation, entrapment/wedging, and strangulation.
   a. Soft objects,[35,36,75–78] such as pillows and pillow-like toys, quilts, comforters, fur-like materials, and loose bedding,[14,17,79–84] such as blankets and nonfitted sheets, can obstruct an infant's nose and mouth.[85] Airway obstruction from soft objects or loose bedding is the most common mechanism for accidental infant suffocation (Fig 2).[86]
   b. It is recommended that weighted blankets, weighted sleepers, weighted swaddles, or other weighted objects not be placed on or near the sleeping infant.
   c. Dressing the infant with layers of clothing is preferable to blankets and other coverings to keep the infant warm while reducing the chance of head covering or entrapment that could result from blanket use. Wearable blankets can also be used.
   d. Bumper pads or similar products that attach to crib slats or sides are not recommended because they have been implicated in deaths attributable to suffocation, entrapment/wedging, and strangulation. With current safety standards for crib slats, bumper pads and similar products are not necessary for safety against head entrapment or to prevent injury.[87,88]
6. Offering a pacifier at nap time and bedtime is recommended to reduce the risk of SIDS. For breastfed infants, delay pacifier introduction until breastfeeding is firmly established.[57] Established breastfeeding is defined as having sufficient milk supply; consistent, comfortable, and effective latch for milk transfer; and appropriate infant weight gain as defined by established normative growth curves.[89] The time required to establish breastfeeding is variable. Infants who are not being directly breastfed can begin pacifier use as soon as desired.
   a. Although the mechanism is yet unclear, studies have reported a protective effect of pacifiers on the incidence of SIDS.[14,18,62,90–99] The protective effect of the pacifier is observed even if the pacifier

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FIGURE 2

Depictions of common mechanisms for accidental sleep-related infant suffocation. Airway obstruction from soft objects or loose bedding is the most common mechanism of accidental infant suffocation. Wedging or entrapment between 2 inanimate objects can result in compression or obstruction of the nose and mouth or thorax. Overlay occurs when a person is found to be on top of or against the infant, obstructing the infant's airway. Image courtesy of the CDC.

falls out of the infant's mouth.[100,101]

b. Offer the pacifier when placing the infant for naps or nighttime sleep. It does not need to be reinserted once the infant falls asleep. Infants who refuse the pacifier should not be forced to take it. In those cases, parents can try to offer the pacifier again when the infant is a little older.
c. Because of the risk of strangulation,[102] never hang a pacifier around the infant's neck or attach it to infant clothing when the infant is placed for sleep or sleeping.
d. Never attach objects, such as blankets, plush or stuffed toys, and other items that may present a suffocation or choking risk, to pacifiers.
e. There is insufficient evidence that finger sucking is protective against SIDS.

7. Avoid smoke and nicotine exposure during pregnancy and after birth. Both smoking by pregnant people and smoke in the infant's environment after birth are major risk factors for SIDS. Pregnant people are advised not to smoke during pregnancy or after the infant's birth.[103–106] It is also advised that no one smoke near pregnant people or infants. Although there is no evidence on the relationship of vaping or electronic cigarette use and SUID, electronic cigarettes contain nicotine, which has been implicated in sleep-related infant deaths. Encourage families to set strict rules for smoke-free homes and cars and to eliminate secondhand tobacco smoke from all places children and other nonsmokers spend time.[107] The risk of SIDS is particularly high when the infant bed shares with an adult smoker, even when the adult does not smoke in bed.[16,17,65,69,70,108]
8. Avoid alcohol, marijuana, opioids, and illicit drug use during pregnancy and after birth. There is an increased risk of SIDS with prenatal and postnatal exposure to alcohol or illicit drug use. Use of alcohol, marijuana, opioids, and illicit drugs periconceptionally and during pregnancy is strongly advised against.[109–116] The risk of SIDS is also significantly higher with concomitant smoking and alcohol use.[117] Parental alcohol, marijuana, opioid, and/or illicit drug use in combination with bed sharing places the infant at particularly high risk for SIDS and suffocation.[18,67]
9. Avoid overheating and head covering in infants. Although studies have demonstrated an increased risk of SIDS with overheating,[118–121] the definition of overheating in these studies varies. Therefore, it is difficult to provide specific room temperature guidelines to avoid overheating.

a. Consider the ambient temperature when dressing or bundling infants. In general, dress infants appropriately for the environment, with no >1 layer more than an adult would wear to be comfortable in that environment.
b. Evaluate the infant for signs of overheating, such as sweating, flushed skin, or the infant's chest feeling hot to the touch.
c. Avoid overbundling and covering of the face and head.[73] Given the questionable benefit of hat use for the prevention of hypothermia[122] and the risk of overheating, it is advised not to place hats on infants when indoors except in the first hours of life or in the NICU.
d. There is currently insufficient evidence to recommend the use of a fan as a SIDS risk-reduction strategy.

10. It is recommended that pregnant people obtain regular prenatal care. There is substantial epidemiologic evidence linking a lower risk of SIDS for infants when there has been regular prenatal care[103–106]; however, limited prenatal care often results from social determinants of health that are also associated with increased risk of SIDS. Pregnant people are advised to follow guidelines for frequency of prenatal visits.[123] Prenatal care provides the opportunity for physicians and nonphysician clinicians to counsel future parents on safe sleep practices and to help them manage high-risk behaviors such as smoking. A history of limited receipt of prenatal care may alert pediatricians, other physicians, and nonphysician clinicians that additional attention to and

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education regarding modifiable risk factors for sleep-related infant death may be needed.

11. It is recommended that infants be immunized in accordance with guidelines from the AAP and Centers for Disease Control and Prevention (CDC). There is no evidence that there is a causal relationship between immunizations and SIDS.[124–127] Instead, vaccination may have a protective effect against SIDS.[128–131]
12. Avoid the use of commercial devices that are inconsistent with safe sleep recommendations. Be particularly wary of devices that claim to reduce the risk of SIDS or other sleep-related deaths. There is no evidence that any of these devices reduce the risk of these deaths. Importantly, the use of products claiming to increase sleep safety may provide a false sense of security and complacency for caregivers. It is important to understand that use of such products does not diminish the importance of following recommended safe sleep practices. Information about a specific product can be found on the CPSC Web site (www.cpsc.gov). The AAP concurs with the US Food and Drug Administration (FDA) and CPSC that manufacturers should not claim that a product or device protects against sleep-related infant death unless there is scientific evidence to that effect.
13. Do not use home cardiorespiratory monitors as a strategy to reduce the risk of SIDS. Use of cardiorespiratory monitors has not been documented to decrease the incidence of SIDS.[132–135] These devices are sometimes prescribed for use at home to detect apnea, bradycardia, and, when pulse oximetry is used, decreases in oxyhemoglobin saturation for infants at risk for these conditions, including some preterm infants with an unusually prolonged course of recurrent, extreme apnea.[136] In addition, routine, in-hospital cardiorespiratory monitoring before discharge from the hospital has not been shown to detect infants at risk for SIDS. Direct-to-consumer heart rate and pulse oximetry monitoring devices, including wearable monitors, are sold as consumer wellness devices. A consumer wellness device is defined by the FDA as one intended "for maintaining or encouraging a healthy lifestyle and is unrelated to the diagnosis, cure, mitigation, prevention, or treatment of a disease or condition."[137] Thus, these devices are not required to meet the same regulatory requirements as medical devices and, by the nature of their FDA designation, are not to be used to prevent sleep-related deaths. Although use of these monitors may give parents "peace of mind,"[138] and there is no contraindication to using these monitors, data are lacking to support their use to reduce the risk of these deaths. There is also concern that use of these monitors will lead to parent complacency and decreased adherence to safe sleep guidelines. A family's decision to use monitors at home should not be considered a substitute for following AAP safe sleep guidelines.
14. Supervised, awake tummy time is recommended to facilitate infant development and to minimize development of positional plagiocephaly. Parents are encouraged to place the infant in tummy time while awake and supervised for short periods of time beginning soon after hospital discharge, increasing incrementally to at least 15 to 30 minutes total daily by 7 weeks of age.[139–142]
    a. Diagnosis, management, and other prevention strategies for positional plagiocephaly, such as avoidance of excessive time in car seats and changing the infant's orientation in the crib, are discussed in detail in the AAP clinical report on positional skull deformities.[143]
15. There is no evidence to recommend swaddling as a strategy to reduce the risk of SIDS. Swaddling, or wrapping the infant in a light blanket, is often used as a strategy to calm the infant and encourage use of the supine position. There is a high risk for death if a swaddled infant is placed in or rolls to the prone position.[120,144,145] If infants are swaddled, always place them on the back. Swaddling should be snug around the chest but allow for ample room at the hips and knees to avoid exacerbation of hip dysplasia. Weighted swaddle clothing or weighted objects within swaddles are not safe and therefore not recommended. When an infant exhibits signs of attempting to roll (which usually occurs at age 3 to 4 months but may occur earlier), swaddling is no longer appropriate because it could increase the risk of suffocation if the swaddled infant rolls to the prone position.[120,144,145] There is no evidence with regard to risk of SIDS related to the arms being swaddled in or out. Parents can decide on an individual basis whether to swaddle and whether the arms are swaddled in or out, depending on the behavioral and developmental needs of the infant.
16. It is essential that physicians, nonphysician clinicians, hospital

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staff, and child care providers endorse and model safe infant sleep guidelines from the beginning of pregnancy.[146–148]

a. Hospital staff who care for infants who are medically unstable or who may have medical exceptions should model and implement all safe infant sleep recommendations as soon as the infant is medically stable and well before anticipated discharge.
b. Staff in level 1 newborn units, mother–baby units, and pediatric inpatient units should model and implement these recommendations beginning at birth and extending to 1 year of age.
c. All physicians, nurses, and other clinicians, especially those who care for pregnant or lactating people and infants, should receive education on safe infant sleep and provide education beginning in the prenatal period. Physicians and nonphysician clinicians should screen for and recommend safe sleep practices at each visit for infants, beginning at prenatal visits and up to age 1 year.
d. Provide families who do not have a safe sleep space for their infant with information about low-cost or free cribs or play yards.
e. Hospitals should ensure that patient care and staff training policies are consistent with updated safe sleep recommendations and that infant sleep spaces (bassinets, cribs) meet safe sleep standards.
f. All state regulatory agencies should require that child care providers receive education on safe infant sleep and implement safe sleep practices. It is preferable that they have written policies.

17. It is advised that media and manufacturers follow safe sleep guidelines in their messaging, advertising, production, and sales to promote safe sleep practices as the social norm. Media exposures (including movie, television, magazines, newspapers, websites, and social media), manufacturer advertisements, and store displays affect individual behavior by influencing beliefs, attitudes, and social norms.[146,148–151] Media images, social media posts, and advertising messages contrary to safe sleep recommendations may provide a false sense of security and create misinformation about safe sleep practices.[152–155]
18. Continue the Eunice Kennedy Shriver National Institute of Health and Human Development "Safe to Sleep" campaign, focusing on ways to reduce the risk of all sleep-related deaths. Pediatricians and other maternal and child health providers can serve as key promoters of the campaign messages.
    a. Continue public education, including strategies for overcoming barriers to behavior change, for all who care for infants, including parents, child care providers, grandparents, foster parents, and babysitters.
    b. Continue to emphasize outreach to subgroups, including Black and American Indian/Alaska Native populations, which have higher incidence of sleep-related deaths or higher prevalence of risk factors.
    c. The campaign should specifically include strategies to promote and support breastfeeding while discouraging bed sharing and eliminate tobacco smoke exposure. The campaign should also highlight the circumstances that substantially increase the risk of sleep-related death or unintentional injury while bed sharing, as listed previously.
    d. Introduce these recommendations universally before pregnancy and ideally in preschool and school curricula to educate older siblings and teenaged and adult babysitters about safe infant sleep practices and to establish that these practices are normative. The importance of preconceptional health, infant breastfeeding, and the avoidance of substance use (including alcohol and smoking) should be included in safe sleep education for those of reproductive age.
    e. Culturally appropriate, respectful, and nonjudgmental communication between clinicians and parents is important when discussing safe infant sleep. Language interpreters should be used as needed. Education that is integrated with other health messaging, such as discussion of the risk of falls and potential skull fractures if infants fall from an adult's arms or a sleep surface, can be helpful. Strategies to avoid inadvertent bed sharing could include setting of alarms or alternative activities (books, television shows, etc) to avoid falling asleep.
    f. Education campaigns need to be well-funded, strategically implemented and evaluated, and innovative, socioculturally appropriate intervention methods need to be encouraged and funded.

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g. Safe sleep messages should be reviewed, revised, and reissued at least every 5 years to address the next generation of new parents and products.

19. Continue research and surveillance on the risk factors, causes, and pathophysiological mechanisms of sleep-related deaths, with the ultimate goal of eliminating these deaths altogether.
    a. Research on the etiology and pathophysiological basis of these deaths should be continued and funded.
    b. Research on the social determinants of health, health care delivery system inequalities, and the impact of structural racism and implicit bias as related to health care access, education, and outcomes that contribute to health disparities, and understanding how to best address these disparities in a socioculturally appropriate manner, should be continued and funded.
    c. Continue and increase implementation of standardized protocols for death scene investigations, as per CDC protocol. Comprehensive autopsies, including full external and internal examination of all major organs and tissues, including the brain; complete radiographs; metabolic testing; and toxicology screening should also be performed. Training about how to conduct a comprehensive death scene investigation should be offered to medical examiners, coroners, death scene investigators, first responders, and law enforcement, and resources to maintain training and conduct of these investigations need to be allocated. In addition, child death reviews, with involvement of pediatricians and other primary care providers, should be supported and funded.
    d. It is important to provide training for hospital personnel in the evaluation and response when an infant who has been found unresponsive and has potentially died suddenly and unexpectedly is brought for medical attention in the emergency department or other medical facilities, as well as information about how to support families during this difficult time.[156]
    e. Improved and widespread surveillance of sleep-related infant deaths should be implemented and funded. In January 2021, the Scarlett's Sunshine on Sudden Unexpected Death Act[157] was passed. This act calls for continuing support of CDC's and the National Institute of Health's Sudden Unexpected Infant Death and Sudden Death in the Young Case Registry and other related fatality case reporting systems. The National Association of Medical Examiners encourages synoptic reporting of sleep-related infant death cases and review by expert panels. Synoptic reporting is a systematic way of reporting specific data elements in a specific format that ensures consistent reporting of all necessary data elements. Use of a synoptic report can clarify key findings not systematically documented on the death certificate, but that could improve surveillance and research.[3]
    f. Federal and private funding agencies should remain committed to all aspects of the aforementioned research and public education campaigns.

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ACKNOWLEDGMENTS

We thank the contributions provided by others to the collection and interpretation of data examined in preparation of this report.

ABBREVIATIONS

AAP: American Academy of Pediatrics
CDC: Centers for Disease Control and Prevention
CPSC: Consumer Product Safety Commission
FDA: US Food and Drug Administration
GER: gastroesophageal reflux
GERD: gastroesophageal reflux disease
ICD-10: International Classification of Diseases, 10th Revision
SIDS: sudden infant death syndrome
SUID: sudden unexpected infant death

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