NCPD
Nursing Continuing Professional Development

Criteria for Awarding NCPD Contact Hours
1.0 contact hour
1. Read the article and complete the evaluation at pediatricnursing.net.
2. Deadline for submission: October 31, 2026
Fees: Individual Subscriber: Free | Regular: $20

Sudden Infant Death Syndrome (SIDS): Known Risk Factors and the Need for Continued Education

Breanna James and Roberta Christopher

James, B., & Christopher, R. (2024). Sudden infant death syndrome (SIDS): Known risk factors and the need for continued education. *Pediatric Nursing, 50*(5), 235-241. https://doi.org/10.62116/PNJ.2024.50.5.235

Sudden infant death syndrome (SIDS) is an unexplained and distressing phenomenon that has plagued parents for years until research determined there was a link between the infant's sleeping position and sudden death. The risk of SIDS doubled when infants were placed on their stomachs to sleep. In 1994, the "Back to Sleep" campaign was introduced to teach caregivers and parents about the dangers of sudden infant death and sleep positions. Despite the wealth of knowledge and information on safe sleep education, there continues to be an alarming number of SIDS deaths in the United States.

Keywords: Sleep, infant, newborn, sudden infant death/prevention and control, supine position, prone position, beds, humans, breastfeeding.

Learning Outcome: After completing this education activity, the learner will be able to discuss the risk factors for sudden infant death syndrome (SIDS) as well as the importance of educating mothers and families about safe sleep practices in order to reduce the number of infant deaths due to SIDS.

Approximately 3,500 infants die each year in the United States from sleep-related deaths, including ill-defined deaths, sudden infant death syndrome (SIDS), and accidental strangulation and suffocation in bed (Moon et al., 2022). African-American infants are two to three times more likely to succumb to SIDS than White, non-Hispanic infants (Centers for Disease Control and Prevention [CDC], 2024; National Institute of Child Health and Human Development [NICHD], 2019). SIDS is the third leading cause of infant mortality.

In 1994, the "Back to Sleep" campaign was launched, named for its main recommendation for all healthy babies to be placed on their backs to sleep to reduce the risk of SIDS (CDC, 2024; Moon et al., 2022; NICHD, 2019). Although the rate of sleep-related deaths initially declined in the 1990s when the "Back to Sleep" campaign began, numbers have increased over the last decade (CDC, 2024). Many other nonmodifiable and modifiable risk factors for deaths related to sleep and SIDS exist, which are immensely similar (CDC, 2018; Moon et al., 2022). In 2012, NICHD and other collaborating organizations expanded and renamed the campaign "Safe to Sleep®" to address not only SIDS but also other sleep-related infant deaths (NICHD, 2019).

SIDS is a subcategory of sudden unexpected infant death (SUID), also known as sudden unexpected death in infancy (SUDI). According to Moon and colleagues (2022), these terms are used to refer to any unexpected or sudden death occurring during the period of infancy. In cases that have undergone review following a sudden death, SUID may be associated with various causes, including unintentional/accidental trauma, such as suffocation, infection, entrapment, metabolic diseases, asphyxia, ingestions, and arrhythmia-associated cardiac channelopathies. SIDS represents a particular source of death in infants aged from birth to one year, and remains unexplained even after an exhaustive investigation that includes post-mortem analysis, scene investigation, and review of the infant's medical history. However, a distinction exists between SUID and SIDS, specifically in cases where the infant is sleeping and not actively observed. Unintentional suffocation cannot be determined by autopsy alone and requires a comprehensive investigation of the death (Brown Speights et al., 2017).

Risk Factors

The etiology of SIDS remains unidentified. Definitive autopsy findings are absent; however, common findings of pulmonary congestion, petechial hemorrhages, pul-

Breanna James, DNP, APRN, FNP-BC, *is a Family Nurse Practitioner, Wolfson Children's Hospital, Jacksonville, FL.*

Roberta Christopher, EdD, MSN, APRN, NE-BC, CAIF, *is an Associate Professor, Keigwin School of Nursing, Jacksonville University, Jacksonville, FL.*

monary edema, and tissue markers of asphyxia have been noted in approximately half of SIDS cases. SIDS deaths are frequently linked to epidemiological risk factors, commonly defined as the likelihood of an outcome occurring in the presence of certain factors or combinations of factors (Moon et al., 2022). Unfortunately, no known preexisting conditions or individual risk factors are believed to result in SIDS (CDC, 2024).

SIDS is thought to be a multifactorial disorder in which genetic and environmental factors interact (Sauber-Schatz et al., 2015). Throughout the 1980s, prone sleep was documented as one of the leading risk factors for SIDS (Perrone et al., 2021. This knowledge led to the 1990s' "Back to Sleep" campaign, which has had a positive impact on reducing the rate of SIDS (Eunice Kennedy Shriver National Institution of Child Health and Human Development, n.d.). Although the rate of crib deaths has decreased, there have been increasing rates of strangulation and accidental suffocation (Brown Speights et al., 2017; Drowos et al., 2019; Erck Lambert et al., 2018).

According to Brown Speights and colleagues (2017), SIDS results from the interplay of various genetic and environmental influences. Although the exact etiology of SIDS remains elusive, there are compelling associations between its incidence and maternal characteristics, lifestyle, and behaviors. Mothers with lower education, income, younger age, African-American ethnicity, bed-sharing habits, and particularly those who smoke cigarettes exhibit a higher frequency of incidence (Carlin et al., 2023; CDC, 2024). Intergenerational advice, particularly from maternal grandmothers, may contribute to unsafe sleep practices linked to SIDS. One study found that grandmothers often provide advice that may conflict with modern recommendations, such as advocating for prone sleeping or co-sleeping due to concerns related to choking risks and infant comfort (Aitken et al., 2016). This can lead to mothers receiving mixed messages about safe sleep practices, creating confusion and sometimes perpetuating outdated, riskier behaviors (Aitken et al., 2016; Hwang & Corwin, 2017).

Breastfeeding and Safe Sleep

Breastfeeding has many emotional and physical benefits for both the infant and mother. Exclusive breastfeeding, without the introduction of formula, significantly reduces the risk of SIDS, with studies showing that any breastfeeding lowers the risk by up to 60%, and the protective effect is strongest for exclusive breastfeeding, particularly for durations of two months or more (Moon et al., 2022). Breastfeeding reduces the incidence of SUID by at least 50% (AAP, 2016; Leruth et al., 2017). Physiologic sleep studies have shown that breastfed infants have a lower arousal threshold than infants who are strictly formula-fed (Hauck et al., 2011).

Breastfeeding improves overall health outcomes, including lower obesity rates, and can reduce health care costs across one's lifespan (Binns et al., 2016; Camacho & Hussain, 2020; Lee & Binns, 2020). The decision to breastfeed is based on social and cognitive factors, including attitudes related to potential embarrassment, time commitment, self-efficacy, and social support (CDC, 2024; Risica & McCausland, 2017). Breast milk is easier to digest and scientifically known to provide optimal immunological, nutritional, and emotional nurturing for the growth and development of infants and children (Moon et al., 2022).

Breastfeeding not only provides health benefits for infants, but it also has economic benefits. In the United States, millions of dollars are saved by choosing to breastfeed because of decreased sick visits to the pediatrician and subsequent hospitalizations (Moon et al., 2022; Leruth et al., 2017). The American Academy of Pediatrics (AAP), U.S. Department of Health and Human Services, American College of Obstetricians and Gynecologists, and the CDC all recommend exclusive breastfeeding for the first six months of life and continuing breastfeeding through the first year and beyond (American College of Obstetricians and Gynecologists, 2023; CDC, 2021; Meek & Noble, 2022; U.S. Department of Health and Human Services [HHS], 2011).

There has been a rise in the exclusivity of breastfeeding among African-American women and women of color; however, many mothers continue to co-sleep with their infants, putting infants at risk for SIDS (Salm Ward et al., 2018). Disparities continue among African-American women and women with lower incomes regarding understanding the benefits of breastfeeding. Updated breastfeeding statistics from the CDC (Marks et al., 2023) show that breastfeeding initiation rates have generally increased, but racial disparities remain significant. The report noted that in 2021, 84% of all infants in the United States were breastfed at some point, with 83.2% of White infants initiating breastfeeding compared to 74.5% of Black infants. These rates highlight a persistent gap in breastfeeding initiation between racial groups, similar to earlier data. Additionally, fewer Black mothers (19.1%) exclusively breastfeed at six months compared to White mothers (26.9%).

Hauck and colleagues (2011) conducted a meta-analysis of 18 case-control studies involving breastfed infants. The study revealed that any amount of breastfeeding, for any duration, is protective against SIDS, with exclusive breastfeeding offering even greater benefits to the infant. Although breastfeeding is a protective factor, other factors such as socioeconomic status and absence of smoking or exposure to smoke also confer protection. According to the meta-analysis, while exclusive breastfeeding for 4 to 6 months is beneficial, the greatest benefits are seen with breastfeeding up to 1 year of age, which aligns with the AAP's recommendations (Moon et al., 2022).

Breastfed infants tend to be more easily arousable from sleep at 2 to 3 months compared to formula-fed infants. The peak age when SIDS occurs is between 2 to 4 months (Eunice Kennedy Shriver National Institution of Child Health and Human Development, 2022). According to Camacho-Morales and colleagues (2021), breastfeeding

provides immunologic advantages by delivering cytokines and immunoglobulins that protect infants when they are most vulnerable to SIDS. This is generally when the infant's maternal-acquired immunoglobulin G levels decrease, and their own production starts. Interestingly, Hauck and colleagues (2011) noted that infants who died of SIDS often had minor illnesses just days prior to death. Infections potentially induce proinflammatory cytokines, leading to respiratory distress, fever, hypoglycemia, shock, and cardiac dysfunction (Hauck et al., 2011.

The caveat to breastfeeding is that the infant must not bed-share with the mother/parents. Breastfeeding mothers need to have a location, such as a chair or rocker, to breastfeed. Mothers are encouraged to nurse their infant in a rocking chair to help prevent falling asleep while nursing (AAP, 2016). This will allow them not to be so comfortable that they accidentally fall asleep. Placing the infant back to sleep in their own crib is imperative for safe sleep.

Safe Sleep Environment

When educating parents about safe sleep, providers must offer detailed guidance recommending that infants should sleep in their own separate sleep area adjacent to the parents' sleeping area. It is recommended that infants sleep on a hard, flat surface, such as a mattress placed in a safety-approved crib and covered with a fitted sheet (AAP, 2016; CDC, 2018). The infant's bed should meet the safety standards set forth by the Consumer Product Safety Commission, which includes slat spacing of less than 2.375 inches. Cribs should have all hardware, and parents need to check for recalls before using them (CDC, 2024; Moon et al., 2022; NICHD, 2019).

Infants should never be allowed to sleep in a bed with an adult, alone in a chair, on a couch, or with anyone else (NICHD, 2019). Smoking should be avoided around the infant, and the crib should not contain pillows, blankets, crib bumpers, or sheepskins. All soft objects, toys, and loose bedding should be removed from the infant's sleep area, and nothing should ever cover the infant's face or head. Infants should be dressed in appropriate clothing, such as a onesie or footed sleeper, and should not be overbundled or placed under loose blankets when put to bed. It is recommended that infants be placed on their backs to sleep for naps and at bedtime. While lying supine, infants are not at an increased risk for choking, reflux, or aspiration because their anatomy has mechanisms that prevent aspiration (AAP, 2016).

Infants should be allowed tummy time while awake when someone is supervising. Parents need to follow recommendations and guidance from their health care provider on vaccines and regular health checkups (CDC, 2024; Moon et al., 2022; NICHD, 2019).

Additional suggestions to help decrease the risk of SIDS include giving the infant a pacifier during naps and bedtime. Data from the Chicago Infant Mortality Study were analyzed to explore risk factors for SIDS (Moon et al., 2022). Interviews were conducted with the primary caregiver in the home two weeks after an infant died. Questions were related to sleep habits, stressors, and ease of access to health care. Results of the study confirmed that the use of pacifiers reduced the risk of SIDS by approximately 70%. The decrease was more prevalent when the mothers were over age 20 years, nonsmokers, married, breastfed, and had sufficient prenatal care. According to the study by Moon and colleagues (2012), pacifier use provided protection against SIDS even in adverse sleep environments. Specifically, pacifier use reduced the risk of SIDS when the infant was in prone- or side-sleeping positions, bed sharing, or when soft bedding was present.

When an infant dies due to occult trauma, suffocation, or hypothermia, it may be undeterminable postmortem (Bennett et al., 2019). If an infant is over-wrapped or even over-clothed and becomes hyperthermic, this can be an increased risk factor for SIDS (Bennett et al., 2019). If the infant is sweating secondary to overheating, this limits the air flow through the material and might result in suffocation due to compression against the infant's mouth and nose (Bennett et al., 2019).

Death scene investigations (DSIs) are needed to fully understand and identify what risk factors were involved in SIDS. DSIs are also helpful in determining if the infant was co-sleeping, what position they were in, what type of surface the infant was on, if there was anything in the crib with the infant, if the mother was intoxicated either by illegal drugs or alcohol, and if the mother smoked prior to laying the infant down (Bennett et al., 2019).

Smoking Cessation

According to the CDC (2024), smoking even one cigarette per day during pregnancy can increase the likelihood of an infant experiencing an unexpected death by twofold. Furthermore, the risk of such deaths increases by 0.07 with each additional cigarette smoked, including up to 20 cigarettes per day, which is equivalent to one pack of cigarettes. If a mother smokes one pack per day, the risk of SUID triples compared to non-smokers. Reducing smoking in heavy-smoking mothers has shown some positive outcomes. Pregnant women who decreased their cigarette consumption by their third trimester saw a 12% reduction in the risk of sudden death for their infants (CDC, 2024; NICHD, 2019). Moreover, women who were able to quit smoking completely by the third trimester resulted in a 23% decrease in the risk of sudden death for their infants (NICHD, 2019).

In addition to an increased risk of SUID, maternal smoking is also associated with other health concerns in children, such as colic, asthma, and obesity (CDC, 2024; Moon et al., 2022). Exposure to secondhand smoke during pregnancy can also increase the likelihood of low birth weight by up to 20% (CDC, 2024; Moon et al., 2022). Despite a decrease in smoking rates in the United States, approximately 4.6% of women still smoked during pregnancy in 2021 (Martin et al., 2023).

Adverse effects of tobacco smoking on conception, pregnancy, fetal

health, and child health have been widely studied. Banderali and colleagues (2015) aimed to discuss the current evidence regarding short- and long-term health effects on child health of parental smoking during pregnancy and lactation, as well as potential underlying mechanisms. The review found that prenatal and postnatal exposure to parental tobacco smoking has negative effects on several outcomes, including preterm birth, fetal growth restriction, low birth weight, sudden infant death syndrome, neurodevelopmental and behavioral problems, obesity, hypertension, type 2 diabetes mellitus, impaired lung function, asthma, and wheezing. While maternal smoking during pregnancy plays a major role in adverse postnatal outcomes, it may also cumulate negatively with smoking during lactation and exposure to second-hand smoking. This review highlights the need for population health policies aimed at implementing educational programs to minimize tobacco smoke exposure during pregnancy and lactation.

Smoking during pregnancy and the postpartum period has serious health outcomes for both the mother and infant. An umbrella review by Avsar and colleagues (2021) examined the overall health outcomes of maternal smoking during pregnancy, which had not been previously published. The review found that maternal smoking during pregnancy is associated with short-term health conditions, such as preterm birth and oral clefts, as well as long-term detrimental impacts, such as obesity and intellectual impairment. The review identified important gaps in the literature regarding the dose-response association, exposure window, and postnatal smoking. Findings indicated that long-term health impacts should be considered when estimating health and cost outcomes of smoking during pregnancy, and interventions for pregnant women who smoke should consider the impact of reducing smoking on both mothers and infants, not solely cessation.

Maternal smoking during pregnancy is an established risk factor for SUID. Anderson and colleagues (2019) investigated the effects of maternal pre-pregnancy smoking, reduction during pregnancy, and smoking during pregnancy on SUID rates. The study found that SUID risk more than doubled with any maternal smoking during pregnancy, and increased twofold between no smoking and smoking one cigarette daily throughout pregnancy. Mothers who quit or reduced their smoking decreased their odds compared with those who continued smoking. The study concluded that if no women smoked in pregnancy, SUID rates in the United States could be reduced substantially.

Finally, Ostfeld and colleagues (2022) aimed to determine if patterns of exposure and associations between SUID and maternal smoking before and during pregnancy differed by race. The study found that smoking was more common in non-Hispanic White mothers than non-Hispanic Black mothers; however, both groups exhibited a dose-response relationship between smoking duration and SUID. The most common exposure duration was from before to the end of pregnancy, suggesting difficulty in quitting and a need for effective interventions.

The reviewed studies emphasized the need to minimize tobacco smoke exposure during pregnancy and lactation and the importance of interventions for pregnant women who smoke (Anderson et al., 2019; Hauck & Blackstone, 2022; Ostfeld et al., 2022). Interventions should consider the impact of reducing smoking on both short- and long-term health outcomes. Maternal smoking during pregnancy is a known risk factor for SUID, and both smoking duration and exposure patterns differ by race, highlighting the need for tailored interventions to reduce the risk of SUID in all communities.

Barriers to Safe Sleep

Varghese and colleagues (2015) conducted a study with a sample of 121 participants consisting of parents, grandparents, and adult caregivers of newborns. A self-administered questionnaire was given to these caregivers. The researcher-developed questionnaire was based on the AAP recommendations for safe sleep and SIDS risk reduction. The questionnaire, known as the Gasalberti Attitude toward Safe Sleep Practices Questionnaire, consisted of 14 items in the first section, where respondents were asked to rate their agreement with statements regarding sleep practices on a Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree). The second part of the questionnaire comprised 6 additional items that aimed to assess the caregivers' beliefs and barriers toward safe sleep practices, also using a Likert scale. Two more items inquired whether the respondents had received literature or teaching on safe sleep practices from a healthcare professional. The questionnaire demonstrated acceptable validity and reliability.

Approximately 22% of caregivers disagreed with safe sleep practices or did not place a child on their back for sleeping. Regarding using a pacifier for sleeping and decreasing the risk of SIDS, 53.4% disapproved of using a pacifier during sleep time. Those who did not agree felt it interfered with breastfeeding.

According to the study by Hirsch and colleagues (2017), paternal caregivers' attitudes toward safe sleep are often unaddressed, despite the importance of educating male caregivers specifically. While male caregivers demonstrate some understanding of safe sleep practices, they do not consistently implement them. Many fathers reported unsafe practices, such as napping with infants in hazardous environments or co-sleeping at night. The study by Hirsch and colleagues (2017) also raised the question of whether safe sleep recommendations inadvertently create barriers for certain groups. Some families may feel vulnerable or uncomfortable seeking assistance due to fears of being judged or facing intervention from state officials, which may discourage them from asking for help related to safe sleep practices.

There are programs that provide free cribs to low-income communities, yet concerns remain about

whether parents will consistently use these cribs as safe sleeping surfaces. According to Whiteside-Mansell and colleagues (2017), cultural differences significantly influence sleep practices, with Black women more likely to co-sleep with their infants compared to White women. The study, which focused on sleep safety in low-income families, also highlighted that despite the availability of safe sleep resources, many families do not adhere to the AAP recommendations for sleep environments. This discrepancy is often influenced by cultural norms and personal beliefs, which shape caregiving practices, including co-sleeping as a common choice among women of color.

According to Salm Ward and colleagues (2015), mothers often choose to co-sleep for a variety of reasons related to comfort and convenience. The systematic review of literature revealed that many mothers feel that co-sleeping provides comfort not only for the infant but also for themselves, as it helps both parties sleep better and for longer periods. Co-sleeping is also believed to foster a closer bond between the mother and infant, as the physical closeness enhances emotional security. Additionally, environmental factors such as the need for warmth, protection, or the lack of a crib due to financial constraints or space limitations further contribute to the decision to co-sleep. The review also found that mothers often co-sleep in response to crying, as it allows them to soothe their infants while ensuring they get the rest they need to care for them. These practices are often influenced by cultural traditions and maternal instincts, with many mothers citing these reasons for choosing to share a bed with their infant.

Many families have intergenerational relationships, and it is crucial to understand the influence other relatives can have on sleep-related practices. Aitken and colleagues (2016) conducted a prospective survey based on self-reported behaviors on safe sleep. Infants were 6 months or younger, and grandmothers provided care. Failure to follow safe sleep guidelines was reported to be associated with well-known myths like infants choking when lying in the supine position. There was also a perceived notion of discomfort when in a supine position. White grandmothers more often adhered to guidelines, while non-White grandmothers did not. Adherence did not differ by income or education in this study.

Racial Disparities

Black mothers are almost 2.5 times more likely to experience the death of an infant than White mothers. Herman and colleagues (2015) stated that reasons for sleep decisions were based on the caregiver's perceptions of the infant's emotional and physical comfort. They also believed the environment was effective, convenient, and safe while also meeting their own needs for rest. Some parents believe the infant is more comfortable on their stomachs and with blankets in the parents' bed for sleep (Gaydos et al., 2015; Herman et al., 2015). In the African-American and American-Indian cultures, these parents felt infants were safer in their parents' beds. These mothers felt that the motherly instinct knows where the infant is in the bed, and she will awaken before anything bad happens. Some of these mothers voiced concerns over the safety of cribs and that infants could not be accurately monitored (Herman et al., 2015).

African-American mothers are more likely to bedshare and place infants prone because of the perceived safety and comfort (Gaydos et al., 2015). African-American mothers have voiced concerns of safety when infants are on their backs. They think that if the infant vomits during sleep on their back, they will choke. This advice often comes from the grandmother (Gaydos et al., 2015). Approximately one-third of African-American infants are sleeping in the prone position by 2 to 4 months, which is reported as the highest period of time for SIDS deaths (Gaydos et al., 2015). Some mothers claimed that breastfeeding was a reason they allowed their infants to bed share. Mothers also took comfort in knowing their babies were right next to them. Many mothers were aware of the guidelines but misunderstood the reasoning behind them (Zundo et al., 2017).

Gaydos and colleagues (2015) conducted a study using focus groups. In seven groups, the participants were only African-American providers and mothers. In this study, the average age of the mother was 22.5 years, and the average age of the infant was less than 9 weeks. Of this sample, less than half had any education beyond high school. In these groups, many mothers were aware of SIDS and understood the recommendations for safe sleeping.

All but three mothers in this study reported placing their babies on their stomachs to sleep. The mothers had three reasons for not complying, including safety in the event of choking, convenience, and the infant's quality of sleep. During these focus groups, mothers reported valuing the advice of family members, specifically their own mother, instead of the clinician's.

Providers recognized that while many African-American mothers were aware of the safe sleep guidelines, cultural factors and family influences, such as advice from grandmothers, often shaped their decisions regarding infant sleep practices. As a result, providers felt limited in their ability to change behaviors, with some expressing frustration over the lack of adherence to recommendations. They acknowledged that more culturally sensitive counseling and detailed explanations of the rationale behind safe sleep practices are needed to better engage families and support informed decision-making (Gaydos et al., 2015).

Brown Speights and colleagues (2017) obtained data on state-level infant mortality reports (IMR) for United States-linked live birth infant death files from 1999 to 2013 and conducted linear regression for each state. There was substantial state-level variation for Black IMR in Arizona, Iowa, and Massachusetts because they were the top three states with improved reduction of SIDS rates. This study quantified the magnitude of racial disparities of the 64,876 infants that died between 1999 and 2013 in 35 states; there were more Black deaths than White.

Socioeconomic Status

Socioeconomic status can include occupation, education, income, social position, and social circumstances. A link between SIDS and socioeconomic status has been noted throughout the literature. The socioeconomic status of a family does not cause SIDS, but it is related to mortality through variables, such as smoking, over-swaddling, low birth weight, and prone sleeping (Elhaik, 2018; Mohamoud et al., 2021; Pretorius et al., 2018; Singh & Yu, 2019). Maternal education and household income are associated with infants being placed prone. Mothers with less education, especially less than a high school education, were twice as likely to place an infant on their stomach, believing the infant is more comfortable and sleeps better (Zundo et al., 2017).

Conclusion

Based on available knowledge, strong evidence supports that not adhering to the safe sleep guidelines can have a profoundly negative impact on an infant's survival (AAP, 2016; Bennett et al., 2019; Brown Speights et al., 2017; CDC, 2024). Strong and compelling evidence supports the recommendation of back to sleep for all infants from birth to 6 months of age (Gaydos et al., 2015; Moon et al., 2017; NICHD, 2019; Salm Ward & Balfour, 2016; Sauber-Schatz et al., 2015; Varghese et al., 2015; Zundo et al., 2017). An abundance of evidence-based knowledge exists on SIDS and preventing infant death, such as placing the baby on their back for sleep, nothing in the crib/bassinet, encouraging breastfeeding, smoking cessation, offering a pacifier, and not bed sharing with their infant. However, while SIDS rates have decreased, the overall rate of sudden unexpected infant deaths (SUID) have not seen a corresponding decline (CDC, 2024). This may be partly due to changes in how these deaths are classified.

SIDS is the third leading cause of infant deaths in the United States, with approximately 3,500 infants dying annually, despite being preventable (Moon et al., 2022). Simple yet effective sleep practices and tools provide much-needed patient education for mothers and offer a family-centered approach to health care delivery. It is imperative that expectant mothers and family members understand the practice of safe sleep. Placing infants on their backs and in a safe sleeping environment with nothing in the crib can potentially save lives. Safe sleep education and practice should be discussed with not only at-risk mothers, but all expectant mothers during pregnancy. Implementing safe sleep education is a wonderful way to achieve the goal of lowering infant deaths related to SIDS. Mothers play a significant role in the safety and well-being of their children. Every provider who encounters an expectant mother should review and discuss safe sleep education to reduce the number of infant deaths due to SIDS.

References

Aitken, M.E., Rose, A., Mullins, S.H., Miller, B.K., Nick, T., Rettiganti, M., Nabaweesi, R., & White-Mansell, L. (2016). Grandmother's beliefs and practices in infant safe sleep. *Maternal and Child Health Journal*, *20*(7), 1464-1471. https://doi.org/10.1007/s10995-016-1945-9

Anderson, T.M., Lavista Ferres, J.M., Ren, S.Y., Moon, R.Y., Goldstein, R.D., Ramirez, J.M., & Mitchell, E.A. (2019). Maternal smoking before and during pregnancy and the risk of sudden unexpected infant death. *Pediatrics, 143*(4), e20183325. https://doi.org/10.1542/peds.2018-3325

Avsar, T.S., McLeod, H., & Jackson, L. (2021). Health outcomes of smoking during pregnancy and the postpartum period: An umbrella review. *BMC Pregnancy and Childbirth, 21*(1), 254. https://doi.org/10.1186/s12884-021-03729-1

Banderali, G., Martelli, A., Landi, M., Moretti, F., Betti, F., Radaelli, G., Lassandro, C., & Verduci, E. (2015). Short and long term health effects of parental tobacco smoking during pregnancy and lactation: A descriptive review. *Journal of Translational Medicine, 13*, 327. https://doi.org/10.1186/s12967-015-0690-y

Bennett, T., Martin, L.J., & Heathfield, L.J. (2019). Global trends in the extent of death scene investigation performed for sudden and unexpected death of infant (SUDI) cases: A systematic review. *Forensic Science International*, *301*, 435-444. https://doi.org/10.1016/j.forsciint.2019.06.013

Binns, C., Lee, M., & Low, W.Y. (2016). The long-term public health benefits of breastfeeding. *Asia-Pacific Journal of Public Health, 28*(1), 7-14. https://doi.org/10.1177/1010539515624964

Brown Speights, J.S., Sittig Goldfarb, S., Wells, B.A., Beitsch, L., & Levine, R.S. (2017). State-level progress in reducing the black-white infant mortality gap, United States, 1999-2013. *American Journal of Public Health; Washington*, *107*(5), 775-782. https://doi.org/10.2105/AJPH.2017.303689

Camacho, E.M., & Hussain, H. (2020). Cost-effectiveness evidence for strategies to promote or support breastfeeding: A systematic search and narrative literature review. *BMC Pregnancy and Childbirth, 20*, 757. https://doi.org/10.1186/s12884-020-03460-3

Camacho-Morales, A., Caba, M., García-Juárez, M., Caba-Flores, M.D., Viveros-Contreras, R., & Martínez-Valenzuela, C. (2021). Breastfeeding contributes to physiological immune programming in the newborn. *Frontiers in Pediatrics, 9*, 744104. https://doi.org/10.3389/fped.2021.744104

Carlin, R.F., Hauck, F.R., & Moon, R.Y. (2023). Increasing disparities in sudden unexpected infant deaths reflect societal failures. *Pediatrics*, *151*(4), e2022060798. https://doi.org/10.1542/peds.2022-060798

Centers for Disease Control and Prevention. (2024). *Sudden unexpected infant death and sudden infant death syndrome: Data and statistics.* https://www.cdc.gov/sudden-infant-death/data-research/data/index.html#:~:text=In%202022%2C%20there%20were%20about,1%2C131%20deaths%20from%20unknown%20causes

Drowos, J., Fils, A., Mejia de Grubb, M.C., Salemi, J.L., Zoorob, R.J., Hennekens, C.H., & Levine, R.S. (2019). Accidental infant suffocation and strangulation in bed: Disparities and opportunities. *Maternal and Child Health Journal, 23*(12), 1670-1678. https://doi.org/10.1007/s10995-019-02786-5

Elhaik, E. (2018). Neonatal circumcision and prematurity are associated with sudden infant death syndrome (SIDS). *Journal of Clinical and Translational Research*, *4*(2), 5. https://doi.org/10.18053/jctres.04.201802.005

Erck Lambert, A.B., Parks, S.E., Shapiro-Mendoza, C.K. (2018). National and state trends in sudden unexpected infant death: 1990-2015. *Pediatrics, 141*(3), e20173519. https://doi.org/10.1542/peds.2017-3519

Eunice Kennedy Shriver National Institute of Child Health and Human Development. (n.d.). *SIDS by baby's age*. https://safetosleep.nichd.nih.gov/sites/default/files/inline-images/SafeSleepSIDSAge.jpg

Gaydos, L.M., Blake, S.C., Gazmararian, J.A., Woodruff, W., Thompson, W.W., & Dalmida, S.G. (2015). Revisiting safe sleep recommendations for African-American infants: Why current counseling is insufficient. *Maternal Child Health*, *19*(3), 496-503. https://doi.org/10.1007/s10995-014-1530-z

Hauck, F.R., & Blackstone, S.R. (2022). Maternal smoking, alcohol, and recreational drug use and the risk of SIDS among a U.S. urban Black population. *Frontiers in Pediatrics, 10*, 809966. https://doi.org/10.3389/fped.2022.809966

Hauck, F.R., Thompson, J.M., Tanabe, K.O., Moon, R.Y., & Vennemann, M.M. (2011). Breastfeeding and reduced risk of sudden death syndrome: A meta-analysis. *Pediatrics*, *128*(1), 103-110. https://doi.org/10.1542/peds.2010-3000

Herman, S., Adkins, M., & Moon, R.Y. (2015). Knowledge and beliefs of African-American and American Indian parents and supporters about infant safe sleep. *Journal of Community Health*, *40*(1), 12-19. https://doi.org/10.1007/s10900-014-9886-y

Hirsch, H.M., Mullins, S.H., Miller, B.K., & Aitken, M.E. (2017). Paternal perception of infant sleeping risks and safety. *Injury Epidemiology*, *5*(Suppl. 1), 9. https://doi.org/10.1186/s40621-018-0140-4

Hwang, S.S., & Corwin, M.J. (2017). Safe infant sleep practices: Parental engagement, education, and behavior change. *Pediatric Annals*, *46*(8), e291-e296. https://doi.org/10.3928/19382359-20170719-02

Leruth, C., Goodman, J., Bragg, B., & Gray, D. (2017). A multilevel approach to breastfeeding promotion: Using Healthy Start to deliver individual support and drive collective impact. *Maternal and Child Health Journal*, *21*(1), 4-10. https://doi.org/10.1007/s10995-017-2371-3

Marks, K.J., Nakayama, J.Y., Chiang, K.V., Grap, M.E., Anstey, E.H., Boundy, E.O., & Hammer, H.C. (2023). Disaggregation of breastfeeding initiation rates by race and ethnicity — United States, 2020–2021. *Preventing Chronic Disease, 20*, 230199. https://doi.org/10.5888/pcd20.230199

Martin, J.A., Osterman, M.J.K., & Driscoll, A.K. (2023). Declines in cigarette smoking during pregnancy in the United States, 2016–2021. *NCHS Data Brief, 458.* https://doi.org/10.15620/cdc:123360

Meek, J.Y., & Noble, L., & Section on Breastfeeding. (2022). Breastfeeding and the use of human milk. *Pediatrics, 150*(1), e2022057988. https://doi.org/10.1542/peds.2022-057988

Mohamoud, Y., Kirby, R., & Ehrenthal, D. (2021). County poverty, urban–rural classification, and the causes of term infant death. *Public Health Reports, 136(*5), 584-594. https://doi.org/10.1177/0033354921999169

Moon, R.Y., Carlin, R.F., & Hand, I.; The Task Force on Sudden Infant Death Syndrome and the Committee on Fetus and Newborn. (2022). Sleep-related infant deaths: Updated 2022 recommendations for reducing infant deaths in the sleep environment. *Pediatrics, 150*(1), e2022057990. https://doi.org/10.1542/peds.2022-057990

Moon, R.Y., Hauck, F.R., Colson, E.R., Kellams, A.L., Geller, N.L., Heeren, T., Kerr, S.M., Drake, E.E., Tanabe, K., McClain, M., & Corwin, M.J. (2017). The effect of nursing quality improvement and mobile health interventions on infant sleep practices. *JAMA*, *318*(4), 351-359. https://doi.org/10.1001/jama.2017.8982

Moon, R.Y., Tanabe, K.O., Yang, D.C., Young, H.A., & Hauck, F.R. (2012). Pacifier use and SIDS: Evidence for a consistently reduced risk. *Maternal Child Health*, *16*(3), 609-614. https://doi.org/10.1007/s10995-011-0793-x

National Institute of Child Health and Human Development. (2019). *Safe to Sleep®.* https://safetosleep.nichd.nih.gov/

Ostfeld, B.M., Schwartz-Soicher, O., Reichman, N.E., & Hegyi, T. (2022). Racial differences in the impact of maternal smoking on sudden unexpected infant death. *Journal of Perinatology, 43*(2), 345-349. https://doi.org/10.1038/s41372-022-01516-0

Perrone, S., Lembo, C., Moretti, S., Prezioso, G., Buonocore, G., Toscani, G., Marinelli, F., Nonnis-Marzano, F., & Esposito, S. (2021). Sudden infant death syndrome: Beyond risk factors. *Life*, *11*(3), 184. https://doi.org/10.3390/life11030184

Pretorius, K., Mackert, M., & Wilcox, G. (2018). Sudden infant death syndrome and safe sleep on Twitter: Analysis of influences and themes to guide health promotion efforts. *JMIR Pediatrics and Parenting, 1*(2), e10435. https://doi.org/10.2196/10435

Risica, P.M., & McCausland, K. (2017). Infant feeding decisions and behaviours among low-income-smoke exposed women: timing and change during pregnancy. *Public Health Nutrition*, *20(15*), 2796-2805. https://doi.org/10.1017/s1368980017001690

Salm Ward, T.C. (2015). Reasons for mother-infant bed-sharing: A systematic narrative synthesis of the literature and implications for future research. *Maternal and Child Health Journal*, *19*(3), 675-690. https://doi.org/10.1007/s10995-014-1557-1

Salm Ward, T.C., & Balfour, G.M. (2016). Infant safe sleep interventions, 1990-2015: A review. *Journal Community Health*, *41*(1), 180-196. https://doi.org/10.1007/s10900-015-0060-y

Salm Ward, T., Kanu, F.A., & Anderson, A.K. (2018). Trends and factors associated with breastfeeding and infant sleep practices in Georgia. *Journal of Community Health*, *43*(3), 496-507. https://doi.org/10.1007/s10900-017-0442-4

Sauber-Schatz, E.K., Sapperfield, W.M., & Shapiro-Mendoza, C.K. (2015). Comprehensive review of sleep-related sudden unexpected infant deaths and their investigations: Florida 2008. *Maternal Child Health*, *19*(2), 381-390. https://doi.org/10.1007/s10995-014-1520-1

Singh, G., & Yu, S. (2019). Infant mortality in the United States, 1915-2017: Large social inequalities have persisted for over a century. *International Journal of Maternal and Child Health and Aids, 8*(1), 19-31. https://doi.org/10.21106/ijma.271

Spencer, N., & Logan, S. (2004). Sudden unexpected death in infancy and socioeconomic status: A systemic review. *Journal of Epidemiol and Community Health*, *58*(5), 366-373. https://doi.org/10.1136/jech.2003.011551

U.S. Department of Health and Human Services. (2011). *The Surgeon General's Call to Action to Support Breastfeeding*. https://www.hhs.gov/surgeongeneral/reports-and-publications/breastfeeding/index.html

Varghese, S., Gasalberti, D., Ahern, K., & Chang, J.C. (2015). An analysis of attitude toward infant sleep safety and SIDS risk reduction behavior among caregivers of newborns and infants. *Journal of Perinatology*, *35*(11), 970-973. https://doi.org/10.1038/jp.2015.111

Whiteside-Mansell, L., Nabaweesi, R., Caballero, A.R., Mullins, S.H., Miller, B.K., & Aitken, M.E. (2017). Assessment of safe sleep: Validation of the parent newborn sleep safety survey. *Journal of Pediatric Nursing*, *35*, 30-35. https://doi.org/10.1016/j.pedn.2017.02.033

Zundo, K., Richards, E.A., Ahmed, A.H., & Codington, J.A. (2017). Factors associated with parental compliance with supine infant sleep: An integrative review. *Pediatric Nursing*, *43*(2), 83-91.