



## Sudden Infant Death Syndrome, Sudden Unexpected Infant Death, and Apparent Life-Threatening Events

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### Keywords

- Sudden infant death syndrome
- Sudden unexpected infant death
- Apparent life-threatening event
- Infant death

### Key Points

- Most Sudden Unexpected Infant Deaths (SUIDs) are the result of preventable circumstances that include unsafe sleeping conditions, such as side or prone sleeping, bed-sharing and sofa sleeping.
- Prenatal exposure to factors such as parental smoking, and substance abuse increases the risk of SUID when the infant is exposed to certain extrinsic conditions.
- There is no evidence that infants who experience an ALTE will succumb to SUIDs.
- Caretaker education is a key strategy to reduce the incidence of SUIDs.

**Case:** A 2-month-old previously healthy male infant was found by his mother at 5:30 AM in his crib, prone, blue, lifeless, and with white frothy material around his mouth. He had been born after a 35-week gestation to a 29-year-old gravida 2 para 1–2 mother by normal spontaneous vaginal delivery. He had been fed his infant formula at 2:00 AM, and placed on his side in his crib because his mother was concerned that he might spit up and choke. A scene investigation using a doll reenactment revealed a crib with bumper pads, stuffed animals, and several blankets, in which the infant had been swaddled. The autopsy revealed scattered thymic petechiae but was otherwise normal. The mode of death was undetermined, with hyperthermia and accidental asphyxia as possible contributing factors.

**S**udden infant death syndrome (SIDS) was first formally defined in 1969 by a National Institutes of Health (NIH) Consensus Panel [1]. SIDS and our understanding of it has evolved in the intervening 50 years as we have learned more about the contributing factors and have become focused on prevention.

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## DEFINITION

The NIH panel initially defined SIDS as the “sudden death of an infant or young child, which is unexpected by history, and in which a thorough post-mortem examination fails to demonstrate an adequate cause” [1]. An autopsy was included as part of this initial definition to eliminate any other cause of death, although not all infants who died suddenly or unexpectedly were subjected to a postmortem examination. A death scene investigation was added to the criteria based on results of a 1986 study that reported that such an investigation revealed environmental factors including accidental asphyxia, overlaying, hyperthermia, and abusive head trauma as contributing factors. Therefore some SIDS deaths could be attributed to specific environmental phenomena [2]. To attribute an infant death to SIDS now also requires a review of the infant’s clinical history as well as family history and a detailed scene investigation [3,4]. A more encompassing term that is now used is sudden unexpected infant death (SUID), also sometimes termed sudden unexpected death in infancy (SUDI). These terms are more expansive, and include any unexpected death, whether explained or unexplained. Included in SUIDs are deaths related to asphyxia, suffocation, intoxications (eg, methylamphetamine or cocaine), channelopathies, and inborn errors of metabolism. The presence of even a mild infection may be associated with an immune reaction and cytokine cascade beyond what is anticipated based on the severity of the infection. There is evidence that polymorphism in the interleukin 10 (IL-10) gene promoter or partial deletions in the *C4* gene may contribute to infection-related SIDS [5].

The term SIDS is now reserved for those SUIDs for which no explanation (intrinsic or extrinsic) is present after a complete autopsy, review of the medical and family history, and death scene investigation that excludes predisposing environmental factors such as prone sleeping or other unsafe sleep environments. Some of the decrease in the reported incidence of SIDS may be related not only to a true reduction in SIDS but also to a reclassification of sudden unexpected deaths based on a more extensive investigation (eg, an infant’s death may be secondary to accidental suffocation rather than SIDS) [6].

## EPIDEMIOLOGY

Initial studies focused heavily on examining the epidemiology of SIDS. Associated factors included lower socioeconomic status, but this is true for all infant deaths and is not unique to SIDS. Maternal age was noted to be another factor, particularly maternal age less than 20 years (teenage mother). Other maternal risk factors included nonwhite ethnicity, lower educational level, unwed status, fewer prepartum and postpartum visits, smoking, and use of illicit substances [7,8]. Maternal as well as paternal smoking remains highly correlated with SIDS, and there seems to be evidence of a neurophysiologic basis for this association [9,10].

SIDS was long considered a natural death the cause of which was unknown [11–13]. Infants who died of SIDS were believed to be intrinsically normal.

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