Description/Etiology

Sudden infant death syndrome (SIDS; also called crib death or cot death) is the sudden and unexpected death of an infant under the age of 1 year that remains unexplained following autopsy and a thorough investigation, including review of the infant’s clinical history and examination of the death scene, if possible. In cases of SIDS, the deceased infant exhibits no signs of trauma or significant disease.

The exact cause or causes of SIDS are unknown. The triple-risk model of SIDS posits that the cause of SIDS is multifactorial, and that sudden death can occur when a predisposed infant experiences homeostatic instability and is exposed to other triggering/risk factors (for details, see Risk Factors, below). Factors that can be involved in the pathogenesis of SIDS include prolongation of the QT interval, apnea, primary autonomic nervous system instability, deficiencies in certain neurotransmitter receptors, unstable homeostatic control due to developmental malformations of brainstem centers that control respiratory and/or cardiac function during sleep, and infection (e.g., *Escherichia coli*, *Clostridium difficile*, *Staphylococcus aureus*, influenza virus, respiratory syncytial virus [RSV]). Infants who experience apparent life-threatening events (ALTEs; i.e., events characterized by a variable combination of apnea, cyanosis, limpness, abnormal limb movements, and choking and/or gagging) share common risk factors for SIDS and appear to be at increased risk for SIDS, but it is unclear whether ALTEs represent interrupted SIDS events or are separate phenomena.

There is no treatment for SIDS, although resuscitation should be attempted in infants discovered in cardiorespiratory arrest without postmortem lividity; unfortunately, few infants are successfully revived. Family member referral to grief counseling and SIDS support groups is usual. Treatment for survivors of ALTE or SIDS involves resuscitation, stabilization, cardiorespiratory monitoring, and investigation for the underlying cause (e.g., ALTE resulting from seizure). There is no evidence that infant monitoring interventions at home can prevent SIDS.

Facts and Figures

SIDS is the leading cause of death in infants aged 1 month to 1 year, accounting for 8% of all infant deaths in the United States. Although infant mortality rates related to SIDS have declined by more than 50% since the introduction of guidelines recommending a supine sleeping position, incidence is still 0.51 per 1,000 live births. Rates of prone sleeping have decreased from > 70% to ~ 20%. SIDS rates in the U.S. vary by racial/ethnic group; per 1,000 live births, SIDS affects 1.24 Native American infants, 1.08 Black infants, 0.51 White infants, 0.28 Asian infants, and 0.20 infants of Central or South American ancestry. Incidence of SIDS in New Zealand (0.80 per 1,000 live births) exceeds that in the U.S., while incidence is lower in the Netherlands, Japan, and England. SIDS is uncommon in neonates and peaks in frequency at 1–4 months of age, with 90% of cases occurring in infants < 6 months of age and 95% occurring in those < 9 months of age. Male infants account for 60–70% of cases.

Risk Factors

› Maternal risk factors include maternal age under 20 at first pregnancy, higher parity, low socioeconomic status, low educational level, being unmarried or not living with the
infant’s father, short intervals between pregnancies, inadequate prenatal care, smoking, drug or alcohol use during pregnancy, placental abruption, placenta previa, and premature rupture of membranes

- Infant risk factors include being male, Black, Alaskan Native, Native American, or age < 6 months; exposure to secondhand smoke; low birth weight; intrauterine growth retardation (IUGR); respiratory or gastrointestinal (GI) infection; premature birth; and a history of SIDS in siblings
- Other risk factors include use of soft bedding materials, bed sharing, pacifier abstinence, bottle feeding, prone or side sleeping position, covering the infant’s head while sleeping, cold weather or environment, and overheating the infant

**Signs and Symptoms/Clinical Presentation**

*See Description/Etiology, above, and Physical Findings of Particular Interest, below.*

**Assessment**

- **Patient History**
  - Ask about the exact sequence of events and assess for risk factors
- **Physical Findings of Particular Interest**
  - The infant is typically found by a parent with his/her head covered by bedclothes, huddled in a corner of a disheveled bed clutching the sheets
  - Mouth/nose exuding serosanguineous and/or frothy discharge Examination can show evidence of terminal motor activity (e.g., clenched fists)
  - The diaper is usually wet and full of stool
- **Laboratory Tests That Might Be Ordered**
  - Laboratory tests might be used to assess for intracranial hemorrhage, meningitis, myocarditis, or other suspected causes of death
- **Other Diagnostic Tests/Studies**
  - Inconclusive postmortem autopsy results typically establish the SIDS diagnosis

**Treatment Goals**

- **Assist With Diagnostic Investigation and Provide Support to Grieving Families**
  - Assess/monitor infant, as appropriate, following emergency resuscitation/declaration of death; thoroughly document findings in case of criminal investigation, and follow facility protocols for infant death and/or mandatory reporting of criminal activity
    - Ask parents factual questions (e.g., when they found the infant, how infant looked, identify items in the bedding and surrounding environment); avoid remarks that can be perceived as blaming (e.g., instead of asking why they did not hear a cry, inquire whether the infant’s head was buried in a blanket)
  - Assess family members’ grief responses, including **suicidal ideation/risk**
  - Provide emotional support and allow the parents and family time and a private space to say goodbye to their child and tell the story of the child’s life and death
    - Acknowledge and be nonjudgmental about the varying grief responses of family members (e.g., parents, siblings, grandparents)
    - Be sensitive to cultural variances related to death and dying
      - If desired, provide parents with mementos (e.g., locks of hair, footprints)
  - Request referral to a clergyperson or a mental health clinician for grief counseling and to a social worker for identification of local support groups
- **Educate About Prevention for Families with Surviving Infants**
  - Educate on infant resuscitation/CPR; when and how to call 9-1-1; and prevention strategies, including putting the infant to sleep on the back alone in a crib, use of a firm sleep surface, room-sharing without bed-sharing, breastfeeding to reduce risk of infections, giving the infant a pacifier to assist in keeping the nasal airway open. Emphasize the importance of placing the infant on the back to sleep, and placing the infant on a firm sleep surface in a dedicated crib or bassinet; educate that it is necessary to avoid putting the infant on the stomach or side, sharing a bed, placing an infant on a couch or armchair, using soft bedding materials, pillows, loose blankets, or toys in the crib, overheating the infant, and smoking (for more information, see Risk Factors, above)
• Instruct parents to place the infant with the head facing alternating directions each time the child is put to bed to prevent occipital flattening during supine sleep
• Encourage supervised, awake tummy time to aid in the infant’s development and build head, neck, and upper body strength

Food for Thought
› Most nurse clinicians know that supine sleep positioning prevents SIDS, however, some nurse’s fear aspiration with supine positioning, and continue to place infants prone or side-lying; this modeling behavior encourages parents to do likewise, putting their babies at increased risk for SIDS
• Researchers who studied 30 infants cared for in the NICU and 30 cared for in general nurseries found that parents of those cared for in the NICU were significantly more likely to report always following 2 safe sleep practices—always placing the baby in the supine position and always putting the baby to sleep in a crib (Fowler et al., 2013)
› Although the incidence of SIDS is highest among infants 2–4 months of age (the time when vaccines are commonly given), there is no evidence of a relationship between SIDS and immunizations
› The American Academy of Pediatrics estimates that 1–5% of infant deaths designated as SIDS are cases of infanticide
› In a recent study of 21,841 infants born to mothers with a history of an alcohol-related diagnosis, investigators found that risk of SIDS was increased 3.15-fold overall, 6.92-fold when the alcohol use disorder occurred during pregnancy, and 8.61-fold when it occurred within 1 year of delivery (O’Leary et al., 2013)
› Since the introduction of the “Back to Sleep” (now “Safe to Sleep”) campaign in 1994, Utah researchers report an 8-fold decrease in the incidence of SIDS. They also concluded that recurrence of SIDS within a family is likely due to genetic causes (Christensen et al., 2016)

Red Flags
› Criminal investigation can be necessary if child abuse is suspected

What Do I Need to Tell the Patient’s Family?
› Refer family to the Centers for Disease Control and Prevention (CDC) SIDS resource Web site at https://www.cdc.gov/sids/parents-caregivers.htm
› Provide information about local support groups and encourage participation

References