- IL6-174G/C polymorphism and sudden infant death syndrome.
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- Perinatal periods of risk analysis of infant mortality in Jackson County, Missouri.
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- Early loss rates of entire pregnancies after assisted reproduction are lower in twin than in singleton pregnancies.
- Preconception B-vitamin and homocysteine status, conception, and early pregnancy loss.
- Supine sleeping position does not cause clinical aspiration in neonates in hospital newborn nurseries.
- Participation of next of kin in research following sudden, unexpected death of a child.
- Infant care practices associated with sudden infant death syndrome:
Findings from the Pacific Islands Families study.

- Identifying infants at risk for sudden infant death syndrome.
- Effectiveness of cigarette regulations in reducing cases of Sudden Infant Death Syndrome.
- Environments, indoor air quality, and children.
- Infant sleep position, head shape concerns, and sleep positioning devices.
- Hemoglobin F in sudden infant death syndrome: A San Diego SIDS/SUDC research project report.
- Unclassified sudden infant death associated with pulmonary intra-alveolar hemosiderosis and hemorrhage.
- Changes in serotonergic receptors 1A and 2A in the piglet brainstem after intermittent hypercapnic hypoxia (IHH) and nicotine.

Opdal SH, Rognum TO.

**IL6-174G/C polymorphism and sudden infant death syndrome.**

The interleukin-6 genotype (IL6 -174GG) has been proposed to be associated with sudden infant death syndrome (SIDS). The aim of this study was to investigate the -174G/C polymorphism in 175 Norwegian SIDS cases and 71 controls. There were no differences in genotype distribution between these two groups (p = 1.0). This confirms the findings in a combined SIDS group compared with European Caucasian controls, but not findings in smaller cohorts of SIDS cases from Australia and England. The discrepancy may result from bias introduced when investigating only a few SIDS cases, differences in diagnostic criteria when diagnosing the cause of death as SIDS, and differences in the distribution of the -174G/C polymorphism in different ethnic groups. Findings of an activated immune system in SIDS indicate that genes involved in the immune response are of importance. However, because there are several polymorphisms in the IL6 gene promoter that could potentially regulate the expression of the gene, more than one polymorphism should be investigated to assess the involvement of the IL-6 gene in SIDS.

Full-text available at: www.sciencedirect.com (not a U.S. Government site)
Shah S, Sharieff GQ.  
*Update on the approach to apparent life-threatening events.*  

**PURPOSE OF REVIEW:** Apparent life-threatening events are an ongoing diagnostic dilemma for clinicians. Since most apparent life-threatening event episodes occur in infants under 6 months of age, they can generate considerable anxiety in parents and providers. This review will discuss issues to consider in the evaluation of infants after an apparent life-threatening event. To ensure proper management, a systematic approach should be taken to attempt to determine the cause of the event.  

**RECENT FINDINGS:** More recent literature suggests that infants with apparent life-threatening events frequently present without signs or symptoms of illness. Obtaining a careful history and physical examination is essential in determining the cause of the event. In this article, we will review the most current literature and discuss the American Academy of Pediatrics new recommendations on sudden infant death syndrome prevention.  

**SUMMARY:** After a careful review of the literature, prone sleeping is one of the biggest risk factors for sudden infant death syndrome. The association between apparent life-threatening events and sudden infant death syndrome remains to be explored further, but current evidence suggests minimal risk after an apparent life-threatening event episode. This article will help clinicians prepare for this difficult challenge by providing up-to-date information and identifying problems to be addressed in future research.

Full-text available at: www.lwwonline.com (not a U.S. Government site)

Hogberg L, Cnattingius, S.  
*Influence of maternal smoking habits on the risk of subsequent stillbirth: Is there a causal relation?*  

**OBJECTIVE:** Maternal smoking has previously been associated with risk of stillbirth. If women who quit smoking reduce their risk of stillbirth, the hypothesis of a causal association would be supported.  

**DESIGN:** Prospective cohort study.  

**SETTING:** Nationwide study in Sweden.  

**POPULATION:** All primiparous women who delivered their first and second consecutive single births between 1983 and 2001, giving a total number of 526,691 women.  

**METHOD:** A population-based Swedish study with data from the Medical Birth Registry, the Immigration Registry and the Education Registry. Logistic regression analyses were used to estimate odds ratios, using 95% confidence intervals.  

**MAIN OUTCOME MEASURE:** Stillbirth in the second pregnancy.  

**RESULTS:** Compared with nonsmokers in both pregnancies, women who smoked during the first pregnancy but not during the second do not have an increased risk of stillbirth (OR 1.02; 95% CI 0.79-1.30), while corresponding risk among women who smoked during both pregnancies was 1.35 (95% CI 1.15-1.58).  

**CONCLUSION:** The result supports that maternal smoking during pregnancy is causally associated with stillbirth risk. Smoking is a preventable cause of stillbirth, and smoking interventions is an important issue in antenatal care.

The perinatal periods of risk (PPOR) methodology provides an easy-to-use analytical approach to infant mortality that helps focus community initiatives for improving maternal and infant health. Because few analyses have been published, many public health practitioners may be unfamiliar with PPOR. This article demonstrates the application of PPOR analysis using infant mortality in Jackson County, Missouri. While the PPOR consists of two phases, this analysis was restricted to the initial phase of the overall process. The second phase builds on the initial findings and prioritizes the contributing factors of fetal/infant mortality so that targeted interventions can be developed. For Jackson County, the PPOR analysis found that racial and geographic disparities existed and, for very low-birth-weight infants, different interventions strategies may be needed on the basis of race. In addition, a mother who experienced a fetal or infant death was more likely to have had a medical risk factor, to have smoked cigarettes, to have started prenatal care after the first trimester or received no prenatal care, and to have been nulliparous.


Nurses in newborn nurseries and neonatal intensive care units are instrumental in educating parents about reducing the risk for SIDS. Nurse participation is acknowledged and encouraged in the current policy statement on SIDS Risk Reduction put forth by the American Academy of Pediatrics. Despite the decline in SIDS, it remains the leading cause of postneonatal infant mortality, and despite greater public compliance with the risk reduction guidelines there is room for improvement in how effectively and consistently they are disseminated. To facilitate nursing participation as educators, role models, and collaborators in the development of relevant hospital policies and procedures, we review the current recommendations, addressing issues that may serve as barriers to participation, describing the biological plausibility underlying risk-reducing practices, and presenting resources from which nurses may obtain teaching materials and model policies.

OBJECTIVE: To investigate the cytokine expression by peripheral blood natural killer (NK) cells of women with recurrent spontaneous abortion (SAB) or implantation failures.

DESIGN: Prospective cohort study. SETTING: University clinic. PATIENT(S): Twenty-five women with recurrent SAB, 20 women with implantation failures, and 15 healthy controls. INTERVENTION(S): None. MAIN OUTCOME MEASURE(S): Cytokine expression (interferon-gamma, tumor necrosis factor [TNF]-alpha, interleukin [IL]-4, IL-5, IL-10, IL-13, granulocyte-macrophage colony-stimulating factor [GM-CSF]) in NK cells and their subsets (CD56(dim) and CD56(bright)). RESULT(S): Proportion (percentage) of CD56(bright)/interferon-gamma(+)/TNF-alpha(+) cells was significantly higher in women with recurrent SAB and implantation failures as compared with that of healthy controls. Proportion of CD56(bright)/IL-4(+)/IL-10(+) cells was very low (<2%) in all groups but was significantly lower in women with recurrent SAB than that of controls. The TNF-alpha/GM-CSF expressing CD56(bright) cell ratio was significantly higher in women with recurrent SAB and implantation failures than in controls. CONCLUSION(S): Natural killer-1 shift in peripheral blood NK cells was identified in nonpregnant women with recurrent SAB and implantation failures. Tumor necrosis factor-alpha/GM-CSF expressing CD56(bright) cell ratio can be applicable for the diagnosis of recurrent SAB or implantation failures. Further studies are needed as to whether cytokine expression of NK cells during pregnancy can affect pregnancy outcome.

Full text available at: www.sciencedirect.com (not a U.S. Government site)

Matias A, La Sala GB, Blickstein I. 
**Early loss rates of entire pregnancies after assisted reproduction are lower in twin than in singleton pregnancies.**
Fertil Steril. 2007 May 2; [Epub ahead of print].

Case-control studies on plurality dependent spontaneous embryonic loss rates after assisted reproduction found that twin pregnancies have a two to five times lower miscarriage rate of the entire pregnancy compared with singletons.

Full text available at: www.sciencedirect.com (not a U.S. Government site)

**Preconception B-vitamin and homocysteine status, conception, and early pregnancy loss.**
Am J Epidemiol. 2007 May 2; [Epub ahead of print].

Maternal vitamin status contributes to clinical spontaneous abortion, but the role of B-vitamin and homocysteine status in subclinical early pregnancy loss is unknown. Three-hundred sixty-four textile workers from Anqing, China, who conceived at least once during prospective observation (1996-1998), provided daily urine specimens for up to 1 year, and urinary human chorionic gonadatropin was assayed to detect conception and early pregnancy loss. Homocysteine, folate, and vitamins B(6) and B(12) were measured in preconception plasma. Relative to women in the lowest quartile of vitamin B(6), those
in the third and fourth quartiles had higher adjusted proportional hazard ratios of conception (hazard ratio (HR) = 2.2, 95% confidence interval (CI): 1.3, 3.4; HR = 1.6, 95% CI: 1.1, 2.3, respectively), and the adjusted odds ratio for early pregnancy loss in conceptive cycles was lower in the fourth quartile (odds ratio = 0.5, 95% CI: 0.3, 1.0). Women with sufficient vitamin B(6) had a higher adjusted hazard ratio of conception (HR = 1.4, 95% CI: 1.1, 1.9) and a lower adjusted odds ratio of early pregnancy loss in conceptive cycles (odds ratio = 0.7, 95% CI: 0.4, 1.1) than did women with vitamin B(6) deficiency. Poor vitamin B(6) status appears to decrease the probability of conception and to contribute to the risk of early pregnancy loss in this population.

Full text available at: aje.oxfordjournals.org/ (not a U.S. Government site)


**Work-up of stillbirth: A review of the evidence.**

Despite improvements in antenatal and intrapartum care, stillbirth, defined as in utero fetal death at 20 weeks of gestation or greater, remains an important, largely unstudied, and poignant problem in obstetrics. More than 26,000 stillbirths were reported in the United States in 2001. Although several conditions have been linked to stillbirth, it is difficult to define the precise etiology in many cases. This paper reviews known and suspected causes of stillbirth including genetic abnormalities, infection, fetal-maternal hemorrhage, and a variety of medical conditions in the mother. The proportion of stillbirths that have a diagnostic explanation is higher in centers that conduct a defined and systematic evaluation. The evidence for recommended diagnostic tests for stillbirth are discussed. The ongoing work of the National Institute of Child Health and Human Development Stillbirth Collaborative Research Network, a consortium of 5 academic centers in the United States that are studying the scope and causes of stillbirth, is presented.

Full text available at: www.sciencedirect.com (not a U.S. Government site)

Mary Anne Tablizo, MD; Penny Jacinto, MD; Dawn Parsley, PNP; Maida Lynn Chen, MD; Rangasamy Ramanathan, MD; Thomas G. Keens, MD.

**Supine sleeping position does not cause clinical aspiration in neonates in hospital newborn nurseries.**

Objectives: To determine the frequency and severity of clinically significant events of spitting up in normal newborns during the first 24 hours of life and to correlate the events with sleeping position. Design: Prospective observational study. Setting: Children born between August 2003 and October 2004 in newborn nurseries at 2 hospitals. Participants: Healthy full-term newborns (n = 3240) (37 weeks estimated gestational age) during the first 24 hours of life. Outcome Measures: Frequency of, and intervention required for, spitting up in supine, side-lying, and prone positions while asleep and awake. Results: Of the 3240 infants, 96.6% did not spit up during sleep. A total of 142 episodes of spitting
up were documented in 111 newborns during sleep. While the newborns were supine and asleep, there were 130 episodes of spitting up. Of these episodes, 55% did not require any intervention, 37% only required brief suctioning with a bulb syringe, 6% required gentle stimulation, and 2% required wall suction. Both nurseries had a policy that newborns should sleep supine; therefore, only 6 newborns were noted to have spitting up episodes while lying on the side, with 66.7% requiring no intervention and 33.3% requiring bulb syringe. No episodes of apnea, cyanosis, documented aspirations, neonatal intensive care unit admissions, or deaths from spitting up were noted. Conclusions: We conclude that clinically significant spitting up occurs infrequently in hospital newborn nurseries while the newborns are asleep. Fewer than 4% of newborns spit up while sleeping in the supine position in the first 24 hours of life, and none required significant intervention or experienced serious sequelae.

Full text available at: archpedi.ama-assn.org/ (not a U.S. Government site)

Gitanjali S. Taneja, PhD; Ruth A. Brenner, MD, MPH; Ron Klinger, MBA; Ann C. Trumble, PhD; Cong Qian, MS; Mark Klebanoff, MD, MPH.

Participation of next of kin in research following sudden, unexpected death of a child.


Objective: To assess parents' perceptions of their experience being interviewed after the sudden, unexpected death of their child. Design: Case-control study in which cases were victims of unintentional drowning. Setting: Households of recent drowning victims in 6 states in the United States. Participants: Caregivers (primarily parents) of 87 cases and 491 matched controls were interviewed via telephone about their child. Main Exposure: Recent death of a child by unintentional drowning. Main Outcome Measures: Degree of stress related to interview, perception of interview length, and participants' views about their willingness to participate in this type of interview again, given their experience with the current interview. Results: Although case participants were more likely than controls to perceive the interview as somewhat or very stressful (odds ratio, 3.64; 95% confidence interval, 1.67-7.96), most of the case participants (87.2%) and controls (96.1%) perceived the interview to be not at all or a little stressful. A greater percentage of controls (37.8%) found the interview to be too long, compared with case participants (20.9%). Among case participants, perceived stress during the interview and the perceived length of the interview were not associated with willingness to participate again. Both of these associations were significant (P<.001) for controls. Conclusions: Caregivers who chose to participate in the study generally rated their experiences as not very stressful. Most of the caregivers indicated that they would be willing to participate again in a similar study.

Full text available at: archpedi.ama-assn.org/ (not a U.S. Government site)

Schluter PJ, Paterson J, Percival T.

Infant care practices associated with sudden infant death syndrome: Findings from the Pacific Islands Families study.

Aim: To report infant care practice prevalence for known modifiable sudden infant death syndrome (SIDS) risk factors among a generally disadvantaged yet low-SIDS rate population of mothers with Pacific infants. Methods: The Pacific Islands Families study follows a cohort of Pacific infants born at a large tertiary hospital in South Auckland, between 15 March and 17 December 2000. Maternal self-report of infant care practices was undertaken at interview 6 weeks post-partum. Results: Overall, 1376 mothers self-reported upon their care practices for infants with median age of 7 weeks. Current maternal smoking was reported by 29%. Of infants: 50% were fully breastfed; 1% were placed prone to sleep; 50% usually bed-shared with their mother and 12% usually bed-shared with a mother who smoked; and 94% usually and 1% occasionally slept in the same room as their mother. Except for room sharing (P = 0.09), there were significant differences in these practices between the three major Pacific Island ethnic subgroups (all P < 0.001). Conclusion: Adoption of bed-sharing and room-sharing practices appears to be saving Pacific infants' lives, even though the New Zealand Cot Death Association has discouraged bed-sharing and not actively promoted room sharing. Mothers need to receive adequate information antenatally about the risks and benefits of room-sharing, bed-sharing and safe-sleeping practices and environments should they decide or have no option but to bed-share.

Full-text available at: www.blackwell-synergy.com (not a U.S. Government site)

Sahni R.

Identifying infants at risk for sudden infant death syndrome.

Abstract: Purpose of review: This review examines recent research relevant to the underlying pathophysiology and risk factors for sudden infant death syndrome.; Recent findings: Current research focuses on the linkage between known risk factors and vulnerability, genetic contributions, and the role of dysfunctional brainstem neurotransmission in the pathogenesis of this syndrome. While social inequalities, prematurity, maternal smoking, infant sleeping practices and sleep environment, arousal failures and environmental pollutants remain important risk factors, new evidence is emerging that certain genetic polymorphisms may contribute to vulnerability. New neuropathological studies have provided strong support for abnormal brainstem serotonergic function. Since serotonin influences a wide range of physiological systems including breathing, the cardiovascular system, temperature, and sleep-wake cycles, this finding strongly supports the hypothesis that sudden infant death syndrome is the result of dysregulation of the autonomic nervous system and provides biological plausibility for certain risk reduction strategies.; Summary: Despite a putative diagnostic shift, sudden infant death syndrome remains the most common cause of death from 1 month to 1 year of age. Recent studies confirmed established risk factors and have suggested new genetic vulnerabilities. Finally, new evidence supports a key role for abnormalities in brainstem serotonin systems in the pathophysiology of this syndrome.

Full-text available at: www.co-pediatrics.com/ (not a U.S. Government site)

Markowitz S.
Effectiveness of cigarette regulations in reducing cases of Sudden Infant Death Syndrome.

Sudden Infant Death Syndrome (SIDS) is a leading cause of mortality among infants and is responsible for thousands of infant deaths every year. Prenatal smoking and postnatal environmental smoke have been identified as strong risk factors for SIDS. Given the link between smoking and SIDS, this paper examines the direct effects of cigarette prices, taxes and clean indoor air laws in explaining changes in the incidence of SIDS over time in the United States. State-level counts of SIDS cases are generated from death certificates for 1973-2003. After controlling for some observed and unobserved confounding factors, the results show that higher cigarette prices and taxes are associated with reductions in SIDS cases. Stronger restrictions on smoking in workplaces, restaurants and child care centers are also effective in reducing SIDS deaths.

Full-text available at www.sciencedirect.com (not a U.S. Government site)

Anderson ME, Bogdan GM.
Environments, indoor air quality, and children.

This article addresses air-quality science in the indoor environments in which children and adolescents find themselves, including the home, the school, and other environments such as work and recreational situations. The home arena is covered extensively, presenting an analysis of the usual exposures such as environmental tobacco smoke and bioaerosols and also touching on discrete issues such as sudden infant death syndrome, carbon monoxide, and public housing. Recreation and work environments are covered as well.

Full text available: www.pediatric.theclinics.com (not a U.S. Government site)

Hutchison L, Stewart A, Mitchell E.
Infant sleep position, head shape concerns, and sleep positioning devices.

Aim: The Back To Sleep campaign has successfully promoted the use of the supine sleep position for infants, with a corresponding decrease in sudden infant death syndrome death rates around the world. The aim of this study was to survey current infant sleep position practices, concerns about plagiocephaly, and the use of sleep positioning devices.

Methods: A postal survey of 400 mothers of infants aged 6 weeks to 4 months was carried out in Auckland, New Zealand. Results: Of the 278 (69.5%) respondents, the supine position was usually used in 64.8%, the prone position in 2.9%, with 32.3% using the side position or a combination of side and back positions. Approximately one-third had a concern about their infant's head shape, and 80% described practices to help prevent head deformation. Thirty per cent reported they had changed their infant's sleep position because of head shape concerns. A third of the mothers used some sort of
positioning system to maintain the infant's sleep position. Conclusions: Anxieties about plagiocephaly, aspiration of vomit, and poor quality sleep are the main concerns that parents have about sleeping their infants on their backs. Further education is needed to inform mothers about these issues and to alleviate their fears.

Full text available: www.blackwell-synergy.com (not a U.S. Government site)

Krous HF, Haas EA, Chadwick AE, Masoumi H, Stanley C, Perry GW. 
**Hemoglobin F in sudden infant death syndrome: A San Diego SIDS/SUDC research project report.**  

Whether levels of fetal hemoglobin (HbF), a possible marker of antecedent hypoxemia, are increased in Sudden Infant Death Syndrome (SIDS) compared to controls is unresolved. Our aims are to: (1) Compare percent fetal hemoglobin (%HbF) levels in SIDS and control cases, and (2) compare our findings with those reported in previous studies. Using Triton-acid-urea gel electrophoresis and quantitative densitometry, %HbF was determined in whole blood specimens obtained at autopsy from SIDS and control cases accessioned into the San Diego SIDS/SUDC Research Project database. The SIDS and control cases were not different with respect to mean age, gender, gestational age, method of delivery, birth weight, or mean autopsy interval; %HbF levels in SIDS and control cases were not significantly different. Given that our results were obtained using optimal methods in well-defined SIDS and control cases, we concur with others that %HbF is not elevated in SIDS.

Full-text available at www.sciencedirect.com (not a U.S. Government site)

Masoumi H, Chadwich AE, Haas EA, Stanley C, Krous HF.  
**Unclassified sudden infant death associated with pulmonary intra-alveolar hemosiderosis and hemorrhage.**  

The significance of severe pulmonary intra-alveolar hemosiderosis in sudden infant death is controversial in forensic pathology. We report a previously healthy 9-month-old female infant who died suddenly and unexpectedly after being placed and then found prone in her crib. Her gestation and delivery were uncomplicated, and she had no history of anemia, hemoptysis, chest trauma, or chronic lung disease. Autopsy revealed diffuse severe pulmonary congestion and severe multifocal intra-alveolar hemorrhage. Metabolic and toxicological screening, microbiologic cultures, and vitreous chemistry were noncontributory. A diagnosis of SIDS had been made by the medical examiner. Subsequent semiquantitative assessment of the severity of pulmonary intra-alveolar hemosiderosis prompted consideration of other disorders, including a heretofore undescribed lethal infantile variant of idiopathic pulmonary hemosiderosis, but none could be confirmed. Therefore, we assigned a study diagnosis of unclassified sudden infant death. We recommend that a diagnosis of SIDS not be made in cases with
unexplained large numbers of intra-alveolar PS. We also recommend that quantitative
assessment of lung sections stained for iron be undertaken in cases with numerous intra-
alveolar macrophages in order to accumulate data that might allow diagnostic
correlations with the circumstances of death and autopsy findings.

Full-text available at www.sciencedirect.com (not a U.S. Government site)

Say M, Machaalani R, Waters K.A.
Changes in serotonergic receptors 1A and 2A in the piglet brainstem after
intermittent hypercapnic hypoxia (IHH) and nicotine.
Brain Res. 2007 Mar 19; [Epub ahead of print]

We studied the effects of intermittent hypercapnic hypoxia (IHH) and/or nicotine on the
immunoreactivity of serotoninergic (5-HT) receptors 1A and 2A in the piglet brainstem.
These exposures were developed to mimic two common risk factors for Sudden Infant
Death Syndrome (SIDS); prone sleeping (IHH) and cigarette smoke exposure (nicotine).
Immunoreactivity for 5-HT(1A)R and 5-HT(2A)R were studied in four nuclei of the
caudal medulla. Three exposure groups were compared to controls (n=14): IHH (n=10),
nicotine (n=14), and nicotine+IHH (n=14). In control piglets, the immunoreactivity of 5-
HT(1A)R was highest in the hypoglossal nucleus (XII), followed by inferior olivary
nucleus (ION), nucleus of the solitary tract (NTS) and dorsal motor nucleus of the vagus
(DMNV), whereas for 5-HT(2A)R, the immunoreactivity was highest in DMNV/NTS
and then ION. Compared to controls, IHH reduced 5-HT(1A)R immunoreactivity in all
studied nuclei (p<0.05) but had no effect on 5-HT(2A)R immunoreactivity. Nicotine
reduced 5-HT(1A)R immunoreactivity in the DMNV, ION and NTS (p<0.001), and
reduced 5-HT(2A)R immunoreactivity in DMNV/NTS (p<0.05). Nicotine+IHH reduced
5-HT(1A)R in DMNV, ION and NTS (p<0.001) but had no effect on 5-HT(2A)R
immunoreactivity. Effects of nicotine on the DMNV were more significant in males
compared to the females. These results show for the first time that IHH and/or nicotine
can reduce 5-HT receptor immunoreactivity within functionally important nuclei of the
piglet medulla. The findings support our hypothesis that 5-HT receptor abnormalities
may be caused by postnatal exposures to clinically-relevant stimuli such as cigarette
smoke exposure and/or prone sleeping.

Full text available: www.sciencedirect.com (not a U.S. government website)