



PREVENTION OPPORTUNITIES UNDER THE BIG SKY

Sudden Unexplained Infant Deaths in Montana, 2003-2010

Sudden Infant Death Syndrome (SIDS) is a diagnosis of exclusion: when an infant under one year of age dies suddenly and unexpectedly during sleep, and a complete autopsy, clinical history, and investigation cannot explain the death.¹ If these criteria are not met, the deaths are classified as unexplained sudden infant death (USID) or as sudden unexpected death in infancy (SUDI).

SIDS is the leading cause of infant mortality after one month of age in the US, accounting for 22% of deaths in this age group; most SIDS deaths occur between the ages of one and four months.² The cause or causes of SIDS deaths are not known, but transient neurologic, endocrine, respiratory, and cardiovascular dysfunctions have been implicated, as have genetic factors that predispose infants to vulnerability.³ It is generally accepted that these physiologic conditions interact with environmental risk factors or triggers.^{1,4} Prevention campaigns based on risk factors have been very effective in reducing the national SIDS mortality rate from 1.20 deaths per 1,000 live births in 1992 to 0.50/1,000 in 2008.² The most dramatic reduction was associated with the “Back to Sleep” campaign, followed by eliminating soft crib bedding, avoiding smoking during pregnancy, and protecting infants from second-hand smoke.⁵

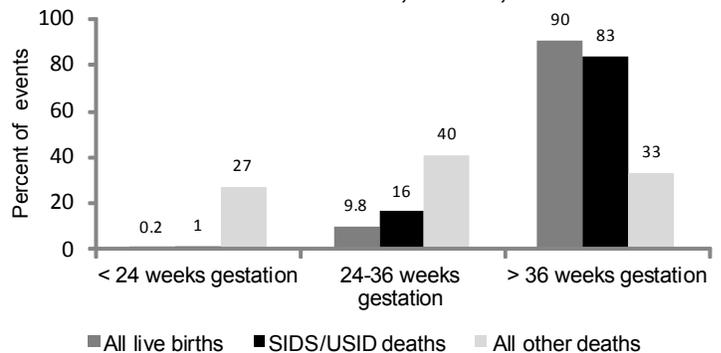
This issue of *Montana Public Health* focuses on SIDS and USID deaths in Montana between 2003 and 2010.

Incidence of SIDS and USID deaths in Montana. We identified 586 deaths of Montana infants; 91 were classified as SIDS (0.95/1,000 live births) and 54 as USID (0.56/1,000), jointly accounting for 25% of deaths in this age group, similar to the national experience. We were able to link 484 of the infant deaths to corresponding Montana birth certificates to examine the association of gestational age and maternal smoking during pregnancy with SIDS and USID deaths.

Risk Factors for SIDS and USID deaths. Prematurity is a risk factor for SIDS/USID. The overall rate of prematurity (<37 weeks completed gestation) among Montana live-born infants was 10%.⁶ Only one SIDS/USID death occurred to an infant of less than 24 weeks, although 16% were of less than 37 weeks gestation (Figure 1). In contrast, 27% of infants who died from other causes were of less than 24 weeks gestation and an additional 40% were of 24 to 36 weeks gestation. Most of the other causes of death were sequelae of extreme prematurity and many were also associated with developmental or genetic birth defects, especially among the very premature infants. Nearly three quarters of the non-SIDS/USID deaths occurred before the age of one month, whereas most SIDS/USID deaths were distributed between birth and 4 months of age (Figure 2).

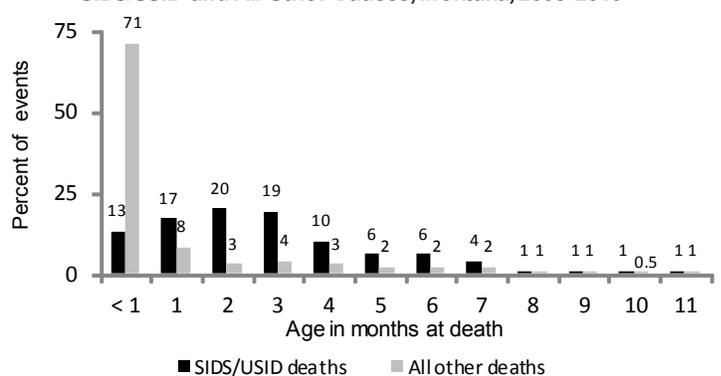
The sex ratio of live births in Montana was 51% male and the sex ratio of all infant deaths was 54%.⁶ There was a slight but not statistically significant excess of male deaths among SIDS/USID deaths compared to all other causes (Figure 3, page 2). American Indian infants accounted for 12% of all live births; there were slight but

Figure 1. Gestational Age of Deaths Under 1 Year SIDS/USID and All Other Causes, Montana, 2003-2010



Based on 484 matched birth and death records. Difference in gestational age distribution among all live births, SIDS/USID deaths, and all other causes of death is significant at $p < .001$.

Figure 2. Distribution of Age at Death Under 1 Year SIDS/USID and All Other Causes, Montana, 2003-2010

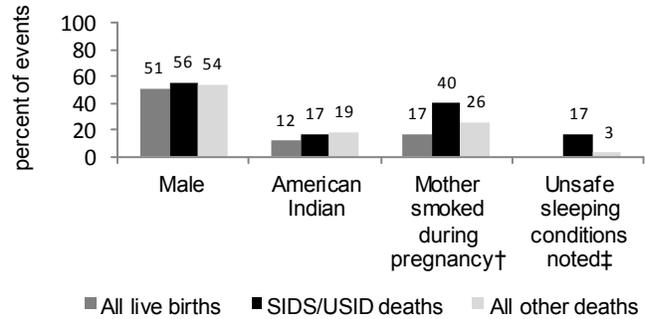


Based on 586 death records. Difference in age at death between SIDS/USID and all other causes of death is significant at $p < .001$.

not statistically significant excesses of American Indian infants among both SIDS/USID and all other deaths. Among SIDS/USID deaths, 40% of mothers smoked during pregnancy, compared to 26% of mothers of infants who died from all other causes, and 17% of mothers of all live-born infants. Unsafe sleeping conditions (not on back, not in infant-appropriate bed, with soft bedding, sharing a bed) were noted in 17% of SIDS/USID deaths but in only 3% of all other deaths; in the latter, sleeping conditions were noted in positional asphyxia and strangulation deaths involving bedding.

Prevention strategies. SIDS prevention should begin with preconception counseling and preparation for a healthy pregnancy, and early entry into prenatal care.⁷ After the birth, Back to Sleep, firm bedding in a suitable infant bed, and avoidance of exposure to second hand smoke are evidence-based preventive measures.

Figure 3. Selected Risk Factors for Deaths Under 1 Year SIDS/USID and All Other Causes, Montana, 2003-2010



† Based on 484 matched birth and death records. Difference among live births, SIDS/USID deaths, and all other causes of death is significant at $p < .01$.
 ‡ Based on 586 death records. Difference between SIDS/USID deaths and all other causes of death is significant at $p < .001$. There are no data on sleeping conditions for infants who did not die.

Recommendations for Clinicians

Counsel all women who are pregnant or planning a pregnancy not to smoke, or if they are smokers, to quit.

Encourage parents to maintain a smoke-free home for their infant's safety.

Educate parents about safe infant sleep practices: on the back, in an age-appropriate bed of their own, in one layer of clothing, and on a firm surface without soft bedding or crib bumpers.

For information on smoking cessation services for pregnant patients, contact Simon Habegger, Montana Tobacco Use Prevention Program, tobaccofree.mt.gov, 406-444-5687 or the Montana Tobacco QuitLine at 1-800-QUIT NOW.

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