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Infant Mortality in the Sleep Environment—A Case Series Analysis, 2012–2014

Background

Over the past 20 years, an average of nearly two infant deaths in a sleep environment occurred each month in Alaska.¹ In July 2014, seven infant deaths occurred in a sleep environment. This spike triggered an in-depth case series investigation of infant sleep environment deaths during 2012–2014. This *Bulletin* summarizes the demographic, behavioral, and environmental characteristics of these fatalities.

Methods

This investigation was conducted by the Alaska Maternal Infant Mortality Review (MIMR) program.² Infant deaths (i.e., deaths that occur from birth to 365 days) occurring in Alaska during 2012–2014 that met the following criteria were included: 1) the Medical Examiner identified a contributing cause of death to be Sudden Unexplained Infant Death (SUID), asphyxia, or unknown, or 2) the MIMR case files mentioned co-sleeping, overlay, or suffocation.

We reviewed reports from the Medical Examiner, scene investigators, and Office of Children's Services (OCS), and extracted information on known risk factors.³ We also extracted data from birth and death certificates, and Public Assistance databases such as Medicaid and the Women, Infants, and Children (WIC) Nutrition Program.

Results

In Alaska during 2012–2014, 195 infant deaths were reported; of which, 66 (34%) occurred in a sleep environment. This includes 4% of neonatal deaths (i.e., deaths that occurred from birth to 27 days) and 71% of postneonatal deaths (i.e., deaths that occurred from 28 to 365 days). The table below compares the proportional distribution of select demographic characteristics between sleep environment deaths and all-cause infant mortality.

Table. Maternal and Infant Demographic Characteristics of Infant Deaths, Alaska, 2012–2014

Demographic Characteristics [†]		Sleep Environment n (%)	All-Cause Mortality n (%)
Sex	Female	28 (42)	72 (41)
	Male	38 (57)	106 (60)
Infant Age Group	Neonatal	4 (6)*	91 (51)
	Postneonatal	62 (94)*	87 (49)
Residential Area [‡]	Urban	38 (58)	114 (64)
	Rural	28 (42)	64 (36)
Marital Status	Married	18 (27)*	79 (45)
	Unmarried	48 (72)*	98 (55)
Maternal Education	No HS Diploma	13 (22)	32 (20)
	HS Diploma	27 (46)	64 (40)
	Some college or 2 year degree	19 (32)	49 (30)
	Bachelor's degree or higher	0 (0.0)*	16 (10)

*Comparison between columns; $p < 0.01$

[†]Partial or complete demographic information were available for 66 deaths in a sleep environment and 178/195 all-cause infant deaths.

[‡]Metro and micropolitan statistical areas are considered urban, all other areas are considered rural.

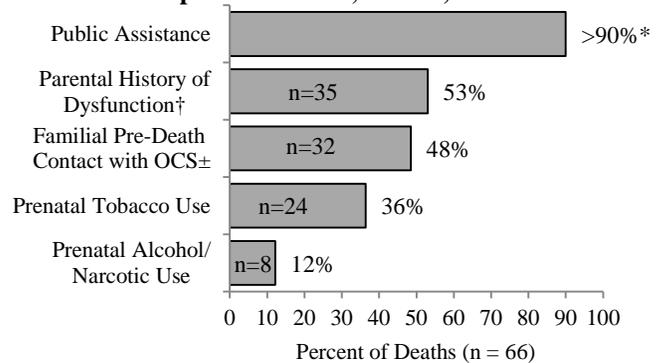
Among the 47 infants for whom sleep position was known, 21 (45%) were placed in a position other than on their back. Among the 50 infant deaths where law enforcement completed a SUID investigation, 25 (50%) were placed with blankets, pillows, furs, or other soft bedding.

Forty-seven (67%) of the infants were bed-sharing; this included sharing 1) a bed, mattress, or the floor (n=35), or 2) a sofa (n=12) with a caregiver. Twenty-six (55%) of bed-sharing

caregivers were under the influence or probably under the influence of alcohol (n=17), tobacco (n=11), and/or other substances (n=7) while bed-sharing.

A number of socioeconomic and behavioral characteristics were shared among the caregivers and families of the deceased infants (Figure).

Figure. Familial and Social Characteristics of Infant Deaths in a Sleep Environment, Alaska, 2012–2014



*Counts are suppressed for categories with proportions >90%.

[†]Parental history of dysfunction included arrests (15), domestic violence (19), and/or substance abuse (29).

[±]Familial contact with OCS defined as any allegation of maltreatment of the decedent or siblings, prior to the death.

Discussion

Although 2014 saw an overall increase in infant deaths in a sleep environment, driven by the influx in July, it appears the distribution of known risk factors is consistent with historical observations.⁴ Among the 66 deaths reviewed, the majority (80%) were in conjunction with non-supine sleep position, caregiver impairment, parental dysfunction, and/or bed-sharing. Furthermore, relative to all-cause infant mortality, unmarried mothers and mothers lacking advanced education experienced more infant deaths in a sleep environment. Finally, sleep environment deaths occurred largely among public assistance recipients, indicating that targeted prevention efforts are needed in order to help further support these families.

Infant deaths occurring in a sleep environment represent an ongoing problem in Alaska. This case series investigation affirms that these deaths continue to occur in conjunction with multiple known risk factors.

MIMR Committee Recommendations

1. Providers should consistently reinforce the statewide Safe Sleep message at each contact with expecting families and families of infants.⁵
2. Birthing facilities interested in conducting a quality improvement project on infant safe sleeping should refer to the Alaska Infant Safe Sleep Toolkits.⁵
3. Providers should identify families that may need extra support and assist them in creating safe sleep environments and understanding risk reduction.

References

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3. Task Force on Sudden Infant Death Syndrome (SIDS) and Other Sleep-Related Infant Deaths. Expansion of recommendations for a safe infant sleeping environment. *Pediatrics* 2011;128:e1341-67.
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