COLORADO Child Fatality Prevention System

Sudden Unexpected Infant Death Data, 2011-2015

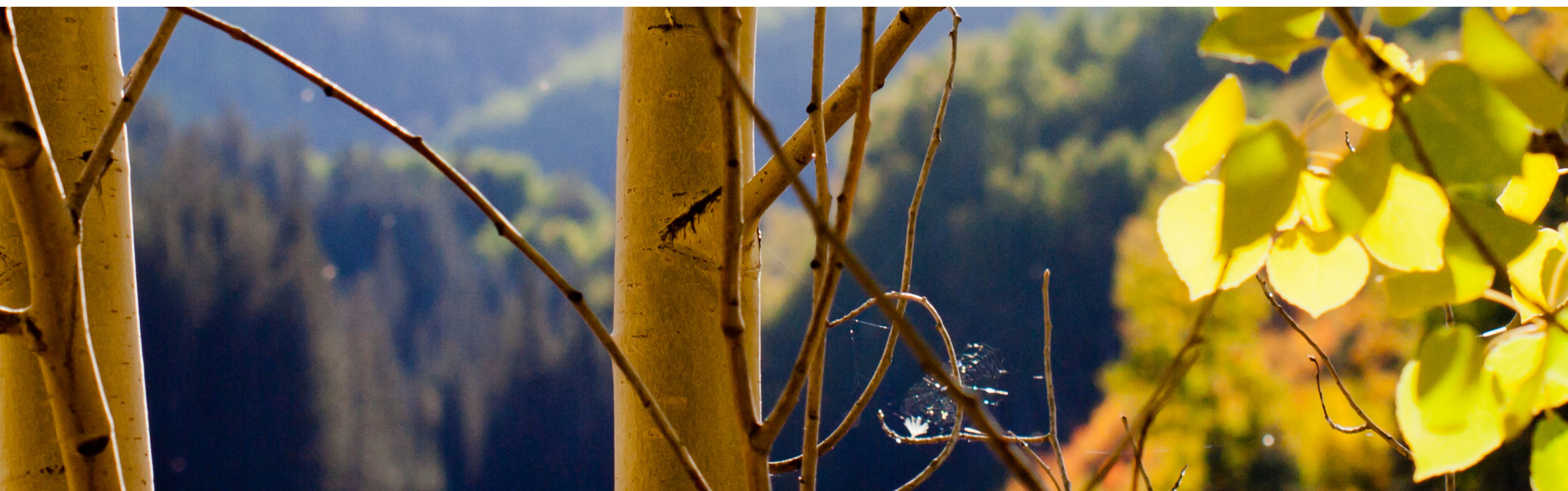
Sudden Unexpected Infant Deaths in Colorado, 2011-2015

Introduction

The Child Fatality Prevention Act (Article 20.5 of Title 25, Colorado Revised Statutes) established the Child Fatality Prevention System (CFPS), a statewide, multidisciplinary, multi-agency effort to prevent child deaths. Although not codified in Colorado Revised Statutes (C.R.S.) until 2005, CFPS has been conducting retrospective reviews of child deaths in Colorado since 1989. CFPS applies a public health approach to prevent child deaths by aggregating data from individual child deaths, describing trends and patterns of the deaths and recommending prevention strategies. The identified strategies are implemented and evaluated at the state and local levels with the goal of preventing similar deaths in the future.

The data presented within this data summary come from comprehensive, statutorily-mandated reviews of deaths among those under 18 years of age occurring in Colorado between 2011 and 2015. Local child fatality prevention review teams are responsible for conducting individual, case-specific reviews of fatalities of children meeting the statutory criteria. Reviewable child deaths result from one or more of the following causes: undetermined causes, unintentional injury, violence, motor vehicle/other transport-related, child maltreatment, sudden unexpected infant death (SUID) and suicide. During Fiscal Year 2017, local teams completed reviews of deaths that occurred in 2015.

The CFPS review process includes deaths of Colorado residents occurring in Colorado, as well as deaths of out-of-state visitors who died in Colorado, and non-residents who were transported to a Colorado hospital and died. These criteria are different than those used in other reports of child fatality data and in many other Colorado government data sources. As a result, the data presented in this data summary may not match other statistics reported at both the state and national levels. This data brief provides an overview of SUID occurring in Colorado and reviewed by CFPS from 2011-2015. For more information on CFPS data, access additional cause-specific data briefs here: http://www.cochildfatalityprevention.com/p/reports.html.



Overview of SUID

SUID, also referred to as sleep-related infant deaths, are fatalities of infants under one year of age that occur suddenly and unexpectedly in sleep environments. SUID include sudden infant death syndrome (SIDS), accidental suffocation and strangulation in bed, positional asphyxia and overlays, as well as deaths occurring in sleep environments that are due to undetermined causes.

Between 2011 and 2015, 224 SUID were identified and reviewed by CFPS teams, representing 12.6 percent of all infant deaths (under 1 year of age) in Colorado for the period. SUID decreased in Colorado between 2011 and 2015, though this decrease did not achieve statistical significance (Table 1). Consistent with national trends, the majority of SUID occurred among those under 5 months of age.[1] Colorado also observed a significant disparity in the rate of SUID by race and ethnicity where the rate among non-Hispanic Black or African American decedents was 2.8 times higher (167.3 per 100,000 live births) than for non-Hispanic White decedents (59.7 per 100,000 live births), which is also consistent with national data.[2]

Table 1. Crude rate of sudden unexpected infant death (SUID) among Colorado residents by year, 2011-2015.

Year of Death	n	Rate*	95% Confidence Interval	
			Lower Limit	Upper Limit
2011-2015	216	65.9	57.1	74.7
2011	46	70.7	50.3	91.1
2012	44	67.5	47.6	87.4
2013	40	61.5	42.5	80.6
2014	51	77.5	56.2	98.7
2015	35	52.6	35.2	70.0

*Per 100,000 live births among residents in Colorado, 2011-2015.

Data sources: Colorado Child Fatality Preventions System and Vital Statistics Program, Colorado

[1]Centers for Disease Control and Prevention. (2016). Data and Statistics. Retrieved from http://www.cdc.gov/sids/data.htm
[2]Parks, S.E., Erck Lambert, A. B., & Shapiro-Mendoza, C. K. (2017). Racial and ethnic trends in sudden unexpected infant deaths: United States, 1995-2013. *Pediatrics*, 139(6). doi: 10.1542/peds.2016-3844.

Risk Factors

The American Academy of Pediatrics (AAP) developed recommendations to help reduce the risk of SUID.[3] These recommendations were updated in fall 2016, however, all of the SUID captured for this data brief occurred prior to the release of these new recommendations.[4] Hence, the 2011 recommendations were used for the purpose of this report. Below are the recommendations.

Level A Recommendations:

- Back to sleep for every sleep.
- Use a firm sleep surface.
- Room-sharing without bed-sharing is recommended.
- Keep soft objects and loose bedding out of the crib.
- Pregnant women should receive regular prenatal care.
- Avoid smoke exposure during pregnancy and after birth.
- Avoid alcohol and illicit drug use during pregnancy and after birth.
- Breastfeeding is recommended.
- Consider offering a pacifier at nap time and bedtime.
- Avoid overheating.
- Do not use home cardiorespiratory monitors as a strategy for reducing the risk of SIDS.
- Expand the national campaign to reduce the risks of SIDS to include a major focus on the safe sleep environment and ways to reduce the risks of all sleep-related infant deaths, including SIDS, suffocation, and other accidental deaths. Pediatricians, family physicians, and other primary care providers should actively participate in this campaign.

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[3]Task force on Sudden Infant Death Syndrome. (2011). SIDS and other sleep-related infant deaths: Expansion of recommendations for a safe infant sleep environment. *Pediatrics*, 128(5), e1341-e1367. doi: 10.1542/peds.2011-2285
[4]AAP Task force on Sudden Infant Death Syndrome. SIDS and other sleep-related infant deaths: Updated 2016 recommendations for a safe infant sleeping environment. *Pediatrics*, 138(5), e2016-2938. doi: 10.1542/peds.2016-2938

As can be observed in Table 2, none of the 224 SUID occurring between 2011 and 2015 in Colorado met all of the AAP Level A Recommendations for a safe sleep environment.

Table 2. Adherence to American Academy of Pediatrics 2011 Safe Infant Sleeping Environment Recommendations for SUID fatalities in Colorado, 2011-2015.[1]

American Academy of Pediatrics 2011 Recommendation	Satisfied recommendation		Did not satisfy recommendation		Missing or unknown	
	n	Percent	n	Percent	n	Percent
All AAP recommendations satisfied	0	0.0	224	100.0	0	0.0
Infant and sleep environment recommendations						
Back to sleep for every sleep	124	55.4	52	23.2	48	21.4
Use a firm sleep surface	58	25.9	165	73.7	*	*
Room-sharing without bed-sharing is recommended	28	12.5	185	82.6	11	4.9
Keep soft objects and loose bedding out f the sleep environment	59	26.3	162	72.3	3	1.3
Consider offering a pacifier at nap time and bedtime	21	9.4	154	68.8	49	21.9
Caregiver-related recommendations						
Pregnant women should receive regular prenatal care (9 or more visits)	118	48.4	89	36.5	37	15.2
Breastfeeding is recommended	167	68.4	39	16.0	38	15.6
Avoid smoke exposure during pregnancy and after birth	64	26.2	103	42.2	77	31.6
Avoid alcohol or illicit drug use during pregnancy and after birth	202	82.8	42	17.2	0	0.0

*Data points with fewer than 3 observations are suppressed.

1Task force on Sudden Infant Death Syndrome (2011). *Pediatrics* (128), 1030-1039.

Data source: Child Fatality Prevention System, Colorado Department of Public Health and Environment.

Risk Factors

Figure 1 demonstrates the proportion of SUID occurring in Colorado by mechanism of death. Among the 224 SUID identified between 2011 and 2015, 42.9 percent (n=96) were attributed to asphyxiation. This category includes accidental suffocation and strangulation in bed (ASSB), overlay and wedging. Of the remaining mechanisms, 27.2 percent (n=61) were classified as undetermined and 27.2 percent (n=61) were classified as SIDS. Nationally, the rate of SIDS has been decreasing since the mid-1990s, while the rates of SUID classified as undetermined causes and ASSB have been increasing.[1,5] Colorado observed similar trends with the proportion of SUID attributable to asphyxia and undetermined causes increasing, and the proportion of SUID classified as SIDS decreasing. Improvements in investigations, a more thorough understanding of case definitions for these mechanisms of death and the collection of more detailed information about safe sleep circumstances potentially led to the observed changes in these rates.

Figure 1. SUID occurring in Colorado by cause category, 2011 - 2015 (n=224)

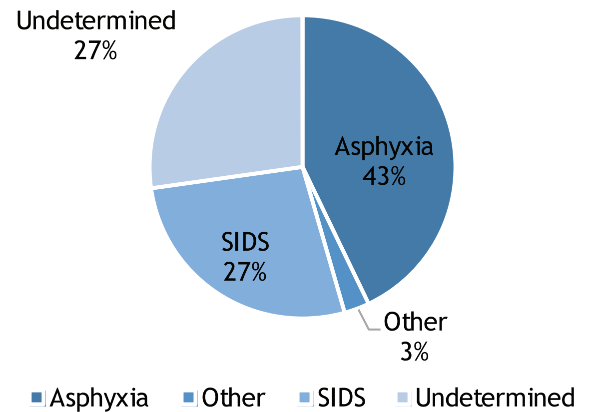
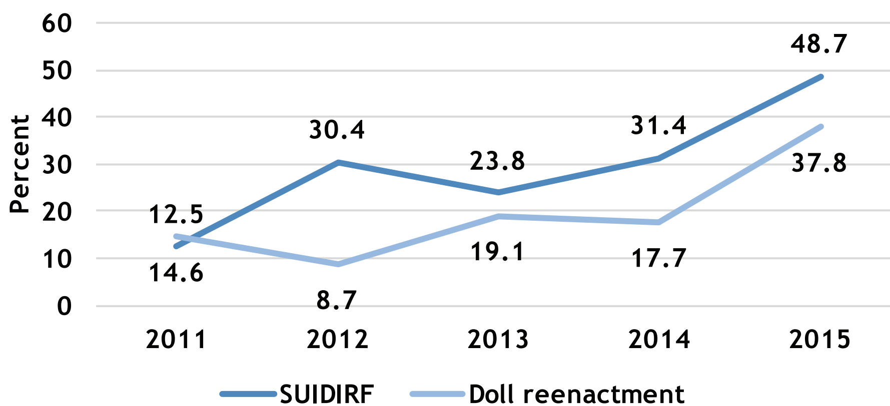


Figure 2. Proportion of SUID occurring in Colorado by selected investigative methods and year, 2011-2015 (n=224)



In 1996, the Centers for Disease Control and Prevention (CDC) developed the Sudden Unexplained Infant Death Investigation Reporting Form (SUIDIRF).[6] This tool was developed to aid in the investigation of SUID. Investigations completed in a thorough and detailed manner are essential to better understanding the circumstances leading to SUID. Use of the form is considered best practice. For the period, between 2011 and 2015, 97.7 percent (n=219) of all of all SUID included a death scene investigation, 28.6 percent (n=64) of investigations included the use of the SUIDIRF and 18.8 percent (n=42) of investigations included a scene reenactment with a doll (data not shown). Figure 2 demonstrates a trend toward increasing utilization of both the SUIDIRF and doll reenactments as part of death scene investigations for SUID in Colorado and suggests an increasing awareness of the utility of these tools in enhancing a statewide understanding of these events.

For more information about CFPS data, please contact the CFPS Support Team at the Colorado Department of Public Health and Environment: support@cfps.freshdesk.com.

[5]TMalloy, M. H. & MacDorman, M. (2005). Changes in the Classification of Sudden Unexpected Infant Deaths: United States, 1992-2001. *Pediatrics*, 115 (5) 1247-1253; doi: 10.1542/peds.2004-2188.

[6]Centers for Disease Control and Prevention. (1996). Guidelines for death scene investigation of sudden, unexplained infant deaths: recommendations of the interagency panel on sudden infant death syndrome. *MMWR*, 45 (No. RR-10).