

Maternal and Child Health Issue Brief

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Infant Mortality in Colorado

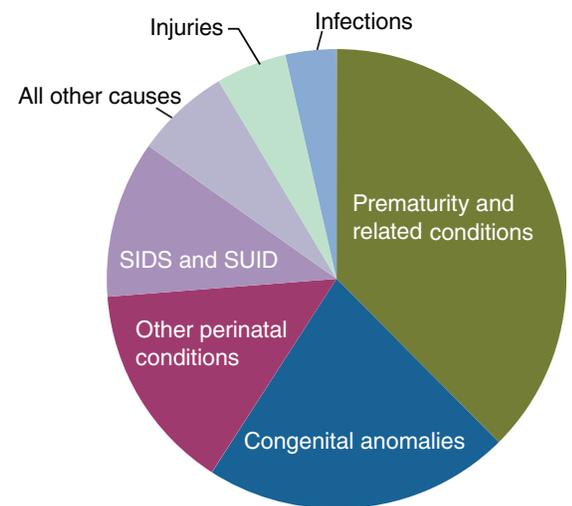
Why is infant mortality an issue?



Infant mortality refers to the death of an infant before his or her first birthday. Infant mortality rates are often used as indicators of the health and well-being of a nation or state. The infant mortality rate is defined as the number of deaths among all births in one year,

expressed as deaths per 1,000 births. In the United States, 25,000 infants die every year, including nearly 400 in Colorado.^{1,2} In 2011, Colorado had 362 deaths out of 65,052 births for a rate of 5.6; the U.S. rate was 6.1.³ Twelve states have lower infant mortality rates than Colorado.⁴ Forty-nine out of over 200 countries have lower infant mortality rates than the United States.⁵

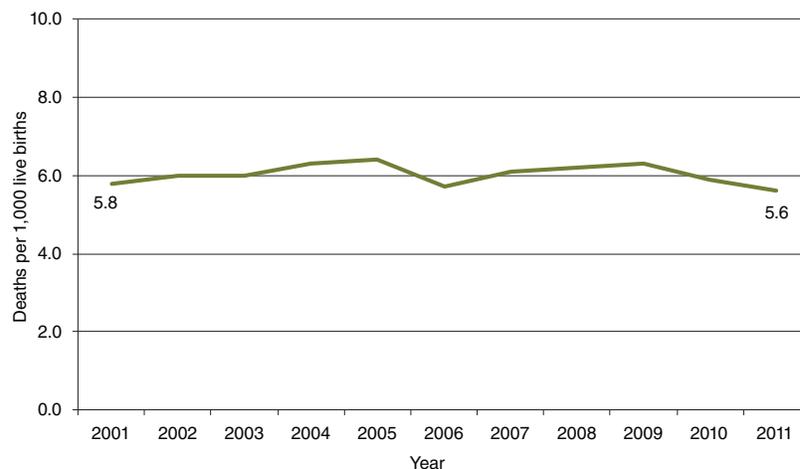
Figure 1. Major causes of infant mortality, Colorado, 2011.^{2,6}



Major causes of infant mortality

Prematurity and related conditions contribute to 38 percent of all infant deaths.^{2,6} Congenital anomalies comprise another 21 percent, and other perinatal conditions contribute 15 percent. Sudden Unexpected Infant Death (SUID) including Sudden Infant Death Syndrome (SIDS), accidental suffocation and strangulation in bed, and undetermined deaths make up 11 percent. Injuries comprise 5 percent and infections contribute 4 percent. All other causes make up the remaining 6 percent. Some causes of death are preventable, while others are more difficult to address. Over the past 10 years, Colorado's infant mortality rate has been close to the Healthy People 2020 goal of 6.0 deaths per 1,000 births. It met the goal in the two most recent years, 2010 and 2011, as well as in 2001 and 2006.

Figure 2. Infant mortality rate, Colorado, 2001-2011.²



Healthy People 2020 Goal¹

By 2020, the infant mortality rate will be reduced to 6.0 deaths per 1,000 births.

- Prematurity and related conditions contribute to 38 percent of all infant deaths in Colorado.
- Colorado ranks 13th nationally in infant mortality

What are the components of infant mortality?

Infant mortality is divided into neonatal and postneonatal time frames with different causes associated with each period. Neonatal deaths occur before 28 days of life, while postneonatal deaths occur between 28 and 365 days. Seri-

ous congenital anomalies (birth defects), prematurity (birth before 37 completed weeks of gestation) and maternal complications of pregnancy are important contributors to neonatal death. SUID and violent death due to suffocation or homicide are contributors to postneonatal death.

Neonatal Mortality²

- Seven out of every ten (71%) Colorado deaths occur within 28 days of birth.
- Serious congenital anomalies contribute to one out of every four neonatal deaths.
- Colorado's neonatal death rate is 4.0 deaths per 1,000 births; the Healthy People 2020 goal is 4.1.

Postneonatal Mortality²

- Three out of every ten (29%) Colorado infant deaths occur between 28 days and one year of age.
- One out of every seven postneonatal deaths is caused by unintentional injuries.
- Colorado's postneonatal death rate is 1.6 deaths per 1,000 births; the Healthy People 2020 goal is 2.0.

Are some types of mortality preventable?

Prematurity and congenital anomalies are major contributors to neonatal mortality, but are complex issues to prevent. Some types of sleep-related infant death, however, may be completely preventable.

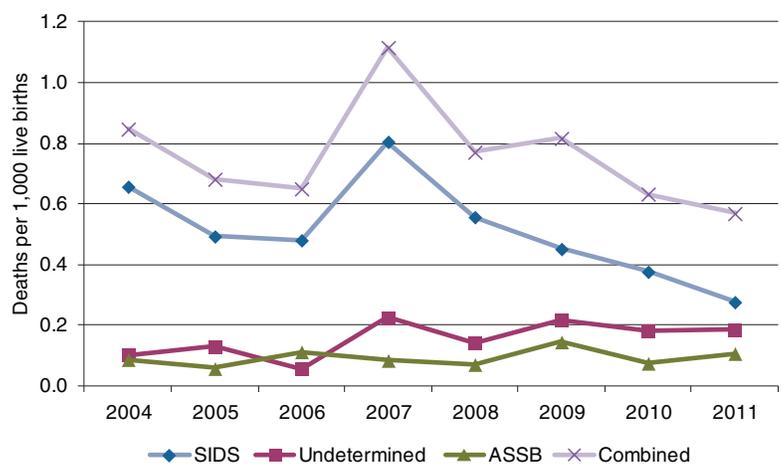
The drive to reduce SIDS deaths is one example of a national campaign begun in 1994⁸ that reduced SIDS deaths by half in Colorado within six years. Colorado now ranks first among all states for the percentage of infants put to sleep on their backs, with 84 percent put to bed this way in 2010.⁹

Figure 6 shows infant mortality rates in recent years by type of SUID, a category accounting for 10 percent of all infant deaths. The top line combines deaths due to SIDS, undetermined cause of death, and accidental strangulation or suffocation in bed (ASSB); the combined rate in 2011 is just under 0.6 deaths per 1,000 births.

While deaths related to SIDS have decreased, undetermined and ASSB deaths may be increasing slightly due to a shift in how these types of death are classified. A reason for the diagnostic shift may be more thorough death scene investigations, resulting in more deaths being assigned to these categories.



Figure 6. Sudden unexpected infant death (SUID) mortality rates, Colorado, 2004-2011.¹⁰

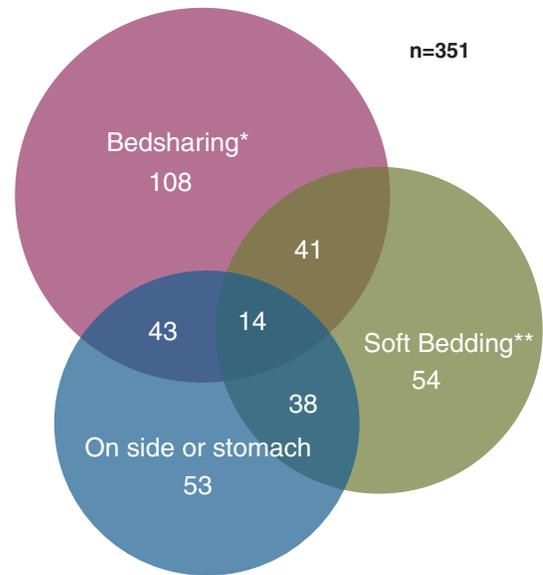


What circumstances surround deaths that occur while infants sleep?

The American Academy of Pediatrics recommends that infants sleep alone on their backs on a firm surface in their cribs. In addition, the Academy recommends that infants sleep in the same room as an adult (room sharing), but that they do not share the same bed.¹¹ Between 2004 and 2011 a total of 474 Colorado infants died in sleep environments. At least 74 percent (351) of these infants were not placed to sleep according to the Academy recommendations regarding bed sharing, soft bedding and sleep position. Figure 7 shows the identified sleep environment circumstances among these infants.

Bed sharing appears to be an important factor in sleep environment deaths, with 206 infants dying when sharing the bed with another person or persons. Where the circles overlap, two or more circumstances were present: for example, a total of 43 infants died who were sharing a bed and who were put to sleep on their side or stomach. Of the 474 infants who died between 2004 and 2011, only 9 percent (42) met the three major American Academy of Pediatrics recommendations (placed to sleep in a crib or bassinet alone, on their backs, on a firm surface). The sleep environments of 81 infants were unknown.

Figure 7. Number of sleep environment infant deaths by known type of circumstance, Colorado 2004-2011.¹⁰



*Bed sharing includes infants placed to sleep on the same sleep surface as one or more adults (e.g. adult bed, couch, or futon).

**Soft bedding includes infants placed to sleep with a pillow, blanket, comforter, or on a pillow-top mattress, or waterbed mattress.

References

1. U.S. Dept. of Health and Human Services. Healthy People 2020 topics and objectives. www.healthypeople.gov/2020/topicsobjectives2020/objectiveslist.aspx?topicId=26. Acc. 12-6-12.
2. Colorado Vital Records, Colorado Dept. of Public Health and Environment.
3. Hoyert DL, Xu J. Deaths: preliminary data for 2011. Centers for Disease Control and Prevention. www.cdc.gov/nchs/data/nvsr/nvsr61/nvsr61_06.pdf. Accessed 12-17-12.
4. Mathews TJ, MacDorman MF. Infant mortality statistics from the 2007 period linked birth/infant death data set. Centers for Disease Control and Prevention. www.cdc.gov/nchs/data/nvsr/nvsr59/nvsr59_06.pdf. Accessed 12-17-12.
5. Central Intelligence Agency. The World Factbook. cia.gov/library/publications/the-world-factbook/rankorder/2091rank.html. Accessed 1-16-13.
6. Callaghan WM, MacDorman MF, Rasmussen SA, Qin C, Lackritz EM. The contribution of preterm birth to infant mortality rates in the United States. *Pediatrics*. 2006;118:1566.
7. Singh GK, Yu SM. Infant mortality in the United States: trends, differentials, and projections, 1950 through 2010. *Am J Public Health*. 1995;85(7):957-964.
8. SIDS Rate and Back Sleeping (1988-2006), National Institute of Child Health and Human Development, National Institutes of Health, www.nichd.nih.gov/SIDS/Documents/SIDS_rate_back_sleep_2006.pdf. Accessed 12-10-12.
9. D'Angelo D. Pregnancy Risk Assessment Monitoring System (PRAMS): using data to reduce infant deaths. Infant mortality in the US: where we stand. Centers for Disease Control and Prevention. www.cdc.gov/about/grand-rounds/archives/2012/October2012.htm. Accessed 12-6-12.
10. Colo. Child Fatality Prevention System, Colo. Dept. of Public Health and Environment.
11. 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;128:1030-1039.

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