

Maternal and Child Health Issue Brief

July 2014 № 2

Infant Mortality in Colorado

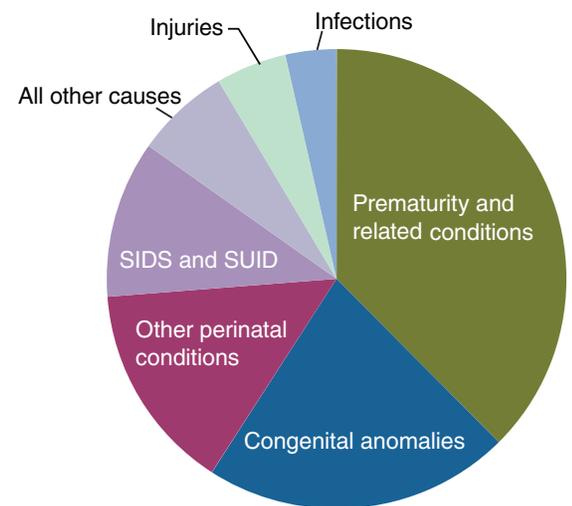
Why is infant mortality an issue?



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

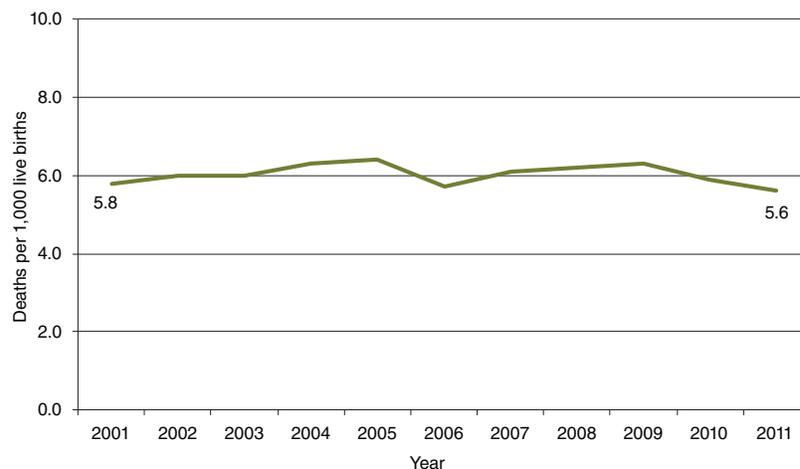
Figure 1. Major causes of infant mortality, Colorado, 2011.^{2,6}



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



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

Healthy People 2020 Goal¹

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

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.

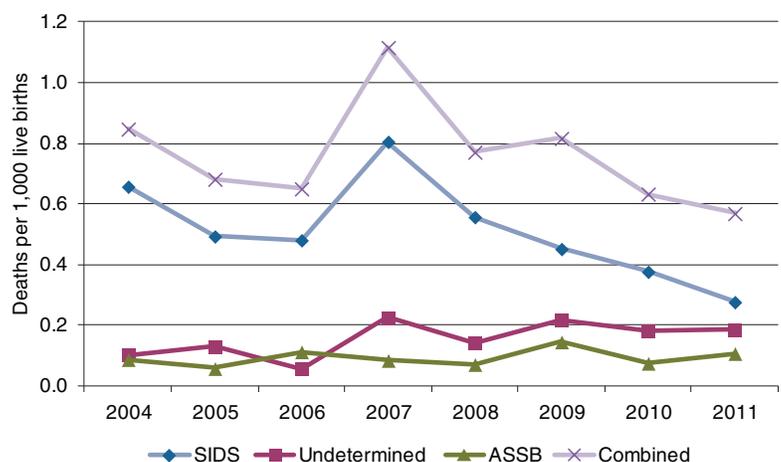
The drive to reduce SIDS deaths is one example of a national campaign begun in 1994⁸ that reduced SIDS deaths by half in Colorado within six years. Colorado now ranks first among all states for the percentage of infants put to sleep on their backs, with 84 percent put to bed this way in 2010.⁹

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

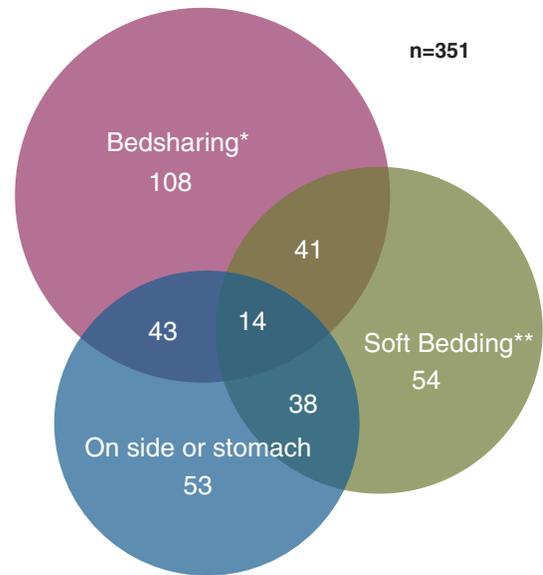


What circumstances surround deaths that occur while infants sleep?

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.

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Addendum

Infant mortality efforts in Colorado

A number of common strategies have been identified to reduce the rates of infant mortality and prematurity in the United States. Colorado has focused efforts on the following four strategies: 1) reducing elective deliveries prior to 39 weeks; 2) increasing the number of pregnant women who quit smoking; 3) promoting safe sleep behaviors; and 4) improving regional perinatal systems. Additional client-level interventions are also in place for specific, high-risk populations.

Reducing elective deliveries prior to 39 weeks

To reduce non-medically indicated inductions and Cesarean sections prior to 39 weeks, the Colorado Chapter of the March of Dimes partners with the Colorado Perinatal Care Council, the Colorado Hospital Association and the Colorado Section of the American Congress of Obstetricians and Gynecologists to encourage hospitals to adopt a “hard stop” policy on elective deliveries and share materials with health care providers and their patients about the risks of early delivery. The March of Dimes also developed a public service announcement for consumers about the importance of waiting until 40 weeks for delivery. In July 2011, the Colorado Department of Health Care Policy and Financing (HCPF) changed Medicaid reimbursement payments to provide the same level of reimbursement for a non-complicated Cesarean section as for a complicated vaginal delivery.

Increasing the numbers of pregnant women who quit smoking

Tobacco cessation during pregnancy has been addressed through a variety of approaches in recent years. A 2005 tax increase on cigarettes and the 2006 Colorado Clean Indoor Air Act prohibiting smoking in most public places have been linked to a statistically significant decrease in the percentage of Colorado women who smoke before pregnancy, from a rate of about 20 percent between 2000 and 2007 to just under 17 percent in 2008. This decrease resulted in fewer women smoking during the last three months of pregnancy, declining from 10 percent during 2000-2007 to 8 percent in 2008.

The Baby & Me Tobacco Free program offers free diapers for participating pregnant women who stop smoking and stay quit postpartum. Since the program began in 2008, more than 2,000 pregnant smokers have enrolled with 1,350 women who quit smoking by delivery. Of those who quit smoking, 59 percent and 43 percent remained tobacco-free at 3- and 6-months postpartum, respectively.

Grant monies from the American Reinvestment and Recovery Act supported efforts to develop a specialized QuitLine program for pregnant women in Colorado. The program provides up to nine personal coaching calls from pregnancy through postpartum with the same, specially trained coach; text messaging support; and monetary rewards for completing calls with the coach. In 2010, HCPF expanded its Medicaid tobacco cessation medication benefit to provide coverage for FDA-approved medications up to two times per year rather than once in a lifetime. In 2012, HCPF expanded the Medicaid tobacco cessation counseling benefit for pregnant women to be billable by a wide array of health care providers. Payment is available, in addition to the global prenatal care package and includes up to eight counseling sessions per client per year.

Improving regional perinatal systems

Improving regional perinatal systems involves efforts to ensure high-risk deliveries are referred to hospitals designated as Level III neonatal intensive care units (NICUs), which provide comprehensive sub-specialty services for high-risk obstetric patients and newborns. The Colorado Perinatal Care Council oversees the hospital designation of obstetric and neonatal care levels. In 2010, 89 percent of very low birth weight infants were born at Level III NICUs, exceeding the Healthy People 2020 goal of 83.7 percent.

Promoting safe sleep behaviors

The Colorado Safe Sleep Coalition is working to prevent unintentional sleep-related infant deaths by improving statewide prevention systems to increase caregiver capacity to implement safe sleep best practices. This includes increasing the percentage of Colorado parents who place their child to sleep according to the American Academy of Pediatrics Infant Safe Sleep Recommendations. Currently, the coalition is working with the Colorado Department of Human Services Division of Early Care and Learning to incorporate safe sleep best practices in the 2012 revision of Rules and Regulations for Child Care Facilities. Colorado is one of nine states funded by the Centers for Disease Control and Prevention to participate in the Sudden Unexpected Infant Death (SUID) Case Registry. The SUID Case Registry builds upon the work of the Colorado Child Fatality Prevention System and the protocols and web-based data entry system developed by the National Center for the Review and Prevention of Child Death. The information gathered under this project will improve the state’s understanding about which factors in the sleep environment are associated with SUID cases, and will assist in the development of effective prevention strategies.

Addendum

Direct service interventions

In addition to the efforts described above, Colorado has a number of programs that work directly with women who are at higher risk for poor birth and infant outcomes during pregnancy and during the early years of their child's life. Prenatal Plus is a Medicaid-reimbursed, case management program serving pregnant women. This program has consistently demonstrated decreases in low birthweight by reducing nutrition, psychosocial and behavioral risk factors. Since 2000, the Nurse-Family Partnership (NFP) home visitation program has addressed infant mortality through interventions aimed at reducing prematurity and low birthweight and decreasing child abuse. In 2010, Colorado received funding from the Affordable Care Act as part of the Maternal, Infant and Early Childhood Home Visitation (MIECHV) program. The primary goal of MIECHV is to improve health and developmental outcomes for children through the implementation of evidence-based home visitation programs in at-risk communities. The MIECHV funding in Colorado is expanding NFP, as well as three other evidence-based home visitation models that serve pregnant women and women with infants: Parents as Teachers; Healthy Steps; and Early Head Start. Colorado's Healthy Start project also provides case management services to pregnant women in Aurora, Englewood and Sheridan, with the goal of decreasing low birthweight and infant mortality.

Community-level efforts

Although Colorado has a relatively low infant mortality rate statewide, the data show that the African-American population is at a much higher risk for infant mortality. African-Americans, however, make up less than 4 percent of the state's population. Two local public health agencies serving communities with higher proportions of African-American women, Tri-County Health Department (serving Arapahoe, Adams and Douglas counties) and Denver Public Health (serving Denver County), each recently conducted the Perinatal Periods of Risk (PPOR) analysis to further explore the causes of infant mortality in their community. Tri-County Health Department's findings led to the development of Healthier Beginnings, Inc., a non-profit community collaborative focused on decreasing the disparity in infant mortality among minority populations, particularly Black/African-American women. The collaborative is implementing the federal Office of Minority Health's Preconception Peer Education Program. Denver Public Health is working through Phase II of the PPOR analysis to help determine next steps.

This project was supported by the Health Resources and Services Administration (HRSA) of the U.S. Department of Health and Human Services (HHS) under grant number H18MC00006, State Systems Development Initiative (SSDI) for \$91,045. This information or content and conclusions are those of the author and should not be construed as the official position or policy of, nor should any endorsements be inferred by HRSA, HHS or the U.S. Government.

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