

Infant Safe Sleep Fact Sheet

PRAMS and CDR

Pregnancy Risk Assessment Monitoring System Child Death Review Program

Sudden Unexpected Infant Deaths (SUID)

In 2015, there was an estimated 3,700 SUID deaths in the U.S. where an infant died suddenly and unexpectedly which represent the leading cause of death between 1 month and 1 year of age.¹ SUID is defined as the death of an infant that occurs suddenly and unexpectedly, and whose cause of death is not immediately obvious before investigation. Most SUIDs are reported as one of three subtypes:

- 1) Sudden Infant Death Syndrome (SIDS) --ICD code R95. SIDS is the sudden death of an infant less than 1 year of age that cannot be explained after a thorough investigation is conducted, including a complete autopsy, examination of the death scene, and a review of the clinical history.
- 2) Unknown cause --ICD code R99. Unknown cause is the sudden death of an infant less than 1 year old that remains undetermined because one or more parts of the investigation was not completed.
- 3) Accidental Suffocation and Strangulation in Bed (ASSB) --ICD code W75. ASSB is the sudden death of an infant less than 1 year of age that can happen because of:
 - Suffocation by soft bedding—for example, when a pillow or water bed covers an infant’s nose and mouth.
 - Overlay—when another person rolls on top of or against the infant while sleeping.
 - Wedging or entrapment—when an infant is wedged between two objects such as a mattress and wall, bed frame, or furniture.
 - Strangulation—for example, when an infant’s head and neck become caught between crib railings.

Even after a thorough investigation, it can be hard to tell SIDS apart from other sleep-related infant deaths such as overlay or suffocation by soft bedding. This is because these deaths are often unwitnessed and there are no tests to tell SIDS apart from suffocation. To complicate matters, people who investigate SUIDs may report cause of death in different ways and may not include enough information about the circumstances of the event from the death scene. Surveillance of SUID and their subtypes is important to inform efforts to reduce mortality from sleep related factors.

Trends in SUID

In Hawaii, the number of SUID deaths has varied annually from 5-20 cases per year since 2000.² Due to small numbers, the overall rates are looked at in 3 year rolling averages which demonstrated a significant decline from a rate of about 80 per 100,000 live births in 2000-02 (78.8) and 2001-03 (82.1) to a low of about 50 in 2011-13 (49.3) and 2012-14 (53.2). However, the rate appears to be increasing again with current rates of 62.5 (2013-15) and 72.6 (2014-16). There has also been some fluctuation among the sub-types of SUID with “SIDS” as a diagnosis declining while an “unknown” diagnosis has generally increased over time.

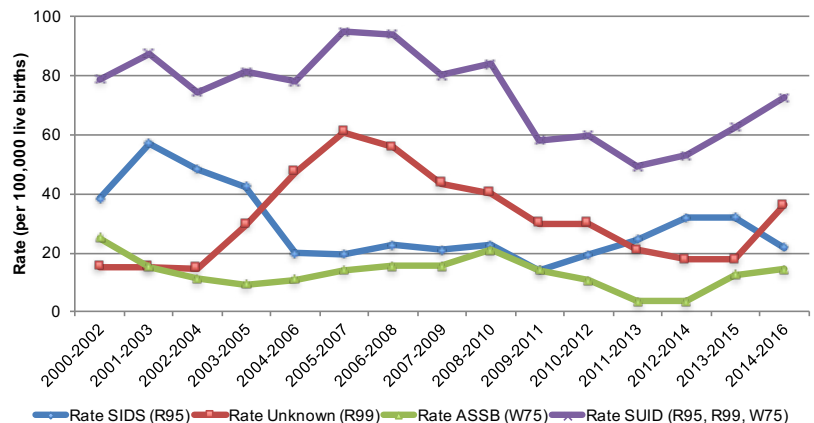
Data Highlights

- More than 9 in 10 infants that died to safe sleep factors were not sleeping in a crib or bassinet
- Nearly 9 in 10 infants who died due to safe sleep factors were sleeping with others at time of death
- About 1 in 5 mothers place their infants to sleep in a high risk, non-supine position (side or stomach)
- Nearly 1 in 3 mothers report infant does not sleep in a crib
- There are significant disparities in non-supine and non-crib sleeping among maternal race, maternal age, and other socio-demographic factors
- WIC is an ideal location for educational interventions given that mothers with risk factors associated with non-supine sleep and non-crib sleeping are more likely to utilize WIC services
- In addition to sleep position and non-crib sleeping, educational efforts should address other SIDS risk factors including soft bedding, bed sharing, and smoking

On Average 14 Infants Die Every Year in Hawaii due to Unsafe Sleep - a Preschool Classroom



SUID and Subtype Mortality Rates by 3 year rolling averages, Hawaii 2000-2016

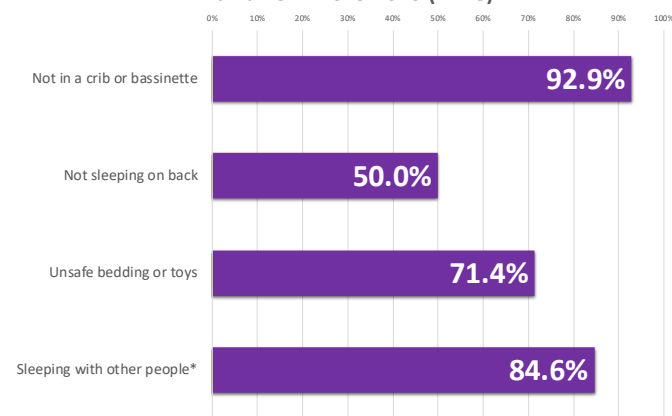


Child Death Review (CDR) Program

The Maternal and Child Health Branch (MCHB) administers the CDR Program, which conducts systematic, multidisciplinary reviews of factors that contribute to the deaths of children younger than 18 years of age. The reviews provide information that can help promote child safety and shape effective public health interventions. As such, the CDR Program reviews data on infant sleep-related deaths to pinpoint areas in need of intervention. A CDR summary report of 2001-2006 deaths revealed over representation of Native Hawaiian (53% of deaths compared to 32% of population) and Pacific Islander (11% of deaths compared to 5% of population).³

From 2015-16, there were 28 infants who died in their sleep in Hawaii classified as a SUID and reviewed by CDR.⁴ Unsafe sleeping factors were associated with many of the deaths with 92.9% not sleeping in a crib or bassinet at time of death. Of these, 84.6% were sleeping with other people at the time of death. Other factors included not back sleeping (50%) and sleeping with unsafe bedding or toys (71.4%). All were deemed preventable.

Factors involved in Sleep-Related Infant Deaths:
Hawaii CDR 2015-2016 (N=28)



* Limited to infants not in a crib or bassinet (N=26)

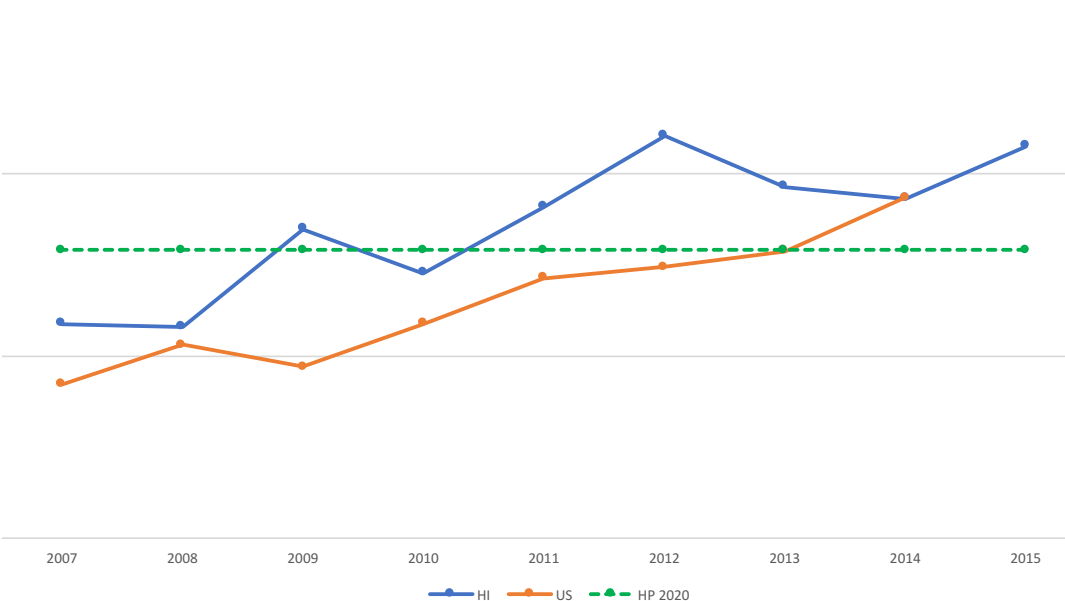
“My granddaughter suffocated and I am now involved in raising awareness of safe sleep practices. This information will prevent any family from experiencing the pain we suffered and still do.”

-- Hawaii Grandparent

Importance of Sleep Environment

Sudden Infant Death Syndrome (SIDS), the sudden, unexplained death of an infant under 1 year of age, accounts for 41% of all post-neonatal deaths in Hawaii.² Putting infants to sleep on their stomach or side, rather than their back, is a major preventable risk factor for sudden infant death syndrome (SIDS). This is because infants are more likely to suffocate when placed on their stomach or side to sleep. The “Back to Sleep” public health campaign dramatically improved supine (back) sleep position from 13% in 1992 to 67% in 1999 with a corresponding 50% decline in SIDS.^{5,6} The national Healthy People 2020 goal is to increase the proportion of infants placed on their backs to sleep to 75.8%. In addition to back to sleep, Sleeping in the same bed places the infant at increased risk of death due to overlay and suffocation. Other factors include possible suffocation due to bedding, toys, and other objects in the crib. Removing toys and soft bedding, not smoking, and room sharing and not bed sharing are some of the primary recommendations from the American Academy of Pediatrics (AAP).⁷

Trends in Supine Sleep Position by Year, Hawaii PRAMS 2007-2015



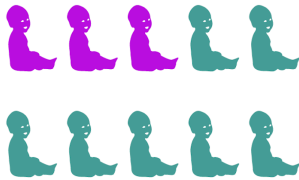
About 1 in 5 infants are not placed on their backs to sleep



Trends in Supine Sleep Position

The proportion of mothers who place their infant on their back to sleep increased slightly from 72% in 2007 to 82% in 2015. Hawaii has consistently higher estimates than nationally which also increased and both exceed the National Healthy People goal.

3 of 10 infants in Hawaii do not sleep in a crib



Factors Related to Non-Supine Sleep Position

Mothers more likely to practice a non-supine position were Native Hawaiian, Other Pacific Islander, Black, younger than 25 years old, unmarried, were on The Special Supplemental Nutrition Program for Women, Infants, and Children (WIC), lived in Kauai, Maui, or Hawaii Counties, and had Medicaid insurance - referred to as Med-QUEST (Quality Care Universal Access, Efficient Utilization, Stabilizing Costs, and Transforming the way health care is provided to recipients).

Factors Related to a Non-Crib Location for Sleep

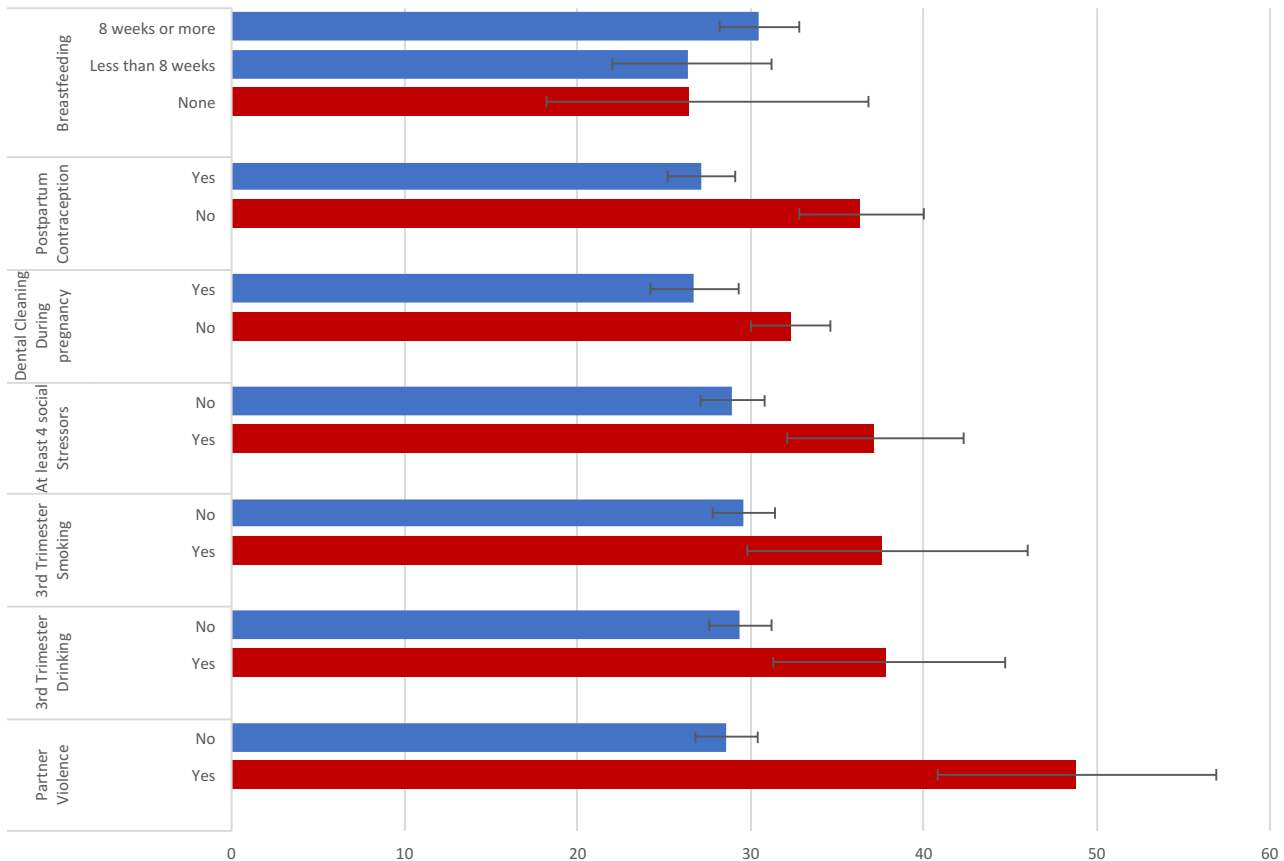
Mothers more likely to report an infant sleeping in a non-crib location (e.g., not in a crib, cradle, or bassinet) were Other Pacific Islander, Filipino, Native Hawaiian, Black, younger than 25 years old, unmarried, were on The Special Supplemental Nutrition Program for Women, Infants, and Children (WIC), had Med-QUEST insurance, and lived in Kauai, Maui, or Hawaii Counties.

Non-Supine Sleep Position and Non-Crib Location by Maternal Characteristics, Hawaii PRAMS 2012-15

	Non-Supine %	95% CI†	Non-Crib %	95% CI†
Race/Ethnicity				
White	13.7	11.5-16.4	22.1	19.1-25.5
Black	25.0	16.4-36.1	29.8	20.2-41.5
Native Hawaiian	27.1	24.3-30.1	32.1	29.0-35.3
Other Pacific Islander	24.4	18.9-30.8	42.0	35.1-49.3
Filipino	18.5	15.4-22.0	38.5	34.1-43.2
Japanese	11.0	7.9-15.2	22.3	17.4-28.1
Chinese	12.4	8.0-18.6	23.1	16.8-30.9
Other Asian	22.2	14.7-32.1	27.3	19.0-37.7
All Others	27.9	19.7-38.0	30.8	22.3-41.0
Maternal Age				
Under 20 years	30.0	23.3-37.8	46.9	38.6-55.3
20-24 years	24.5	21.3-28.1	35.3	31.4-39.4
25-34 years	17.7	16.0-19.6	27.0	24.8-29.3
35 or more years	17.6	14.6-20.9	27.9	24.1-32.0
Marital Status				
Married	16.9	15.2-18.7	24.9	22.9-27.1
Unmarried	24.5	21.9-27.4	38.3	35.1-41.6
Insurance Coverage of Prenatal Care				
Uninsured	20.9	10.3-37.8	36.5	21.0-55.5
Med-QUEST	23.8	21.3-26.6	38.7	35.6-42.0
Private/Military	17.6	16.0-19.4	25.2	23.2-27.3
Prenatal WIC Participation				
No	16.9	15.2-18.7	25.9	23.7-28.1
Yes	23.5	21.3-25.9	35.0	32.3-37.8
County of Residence				
Honolulu	19.1	17.2-21.0	28.0	25.8-30.4
Hawai'i	20.9	18.3-21.1	34.4	31.6-37.2
Maui	20.0	17.8-22.4	33.9	31.0-36.9
Kauai	24.5	22.0-27.2	35.6	32.6-38.8
Overall	19.7	18.3-21.1	29.8	28.1-31.6

† Denotes 95% Confidence Interval around prevalence estimate

Perinatal Risks and Behaviors Associated with a Non-Crib Location, Hawaii PRAMS 2012-15



Perinatal Risks and Behaviors Associated with a Non-Crib Location in Hawaii

Mothers that reported a non-crib location for their infants tended to have a less healthier behavior profile. They were more likely to smoke and drink during pregnancy, report intimate partner violence, report at least 4 life stressors, and less likely to have a dental cleaning during pregnancy and use postpartum contraception. There were no significant differences with breastfeeding initiation or duration compared to those that reported using a crib.



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Safe Sleep Hawaii

The Maternal and Child Health Branch provides leadership for Safe Sleep Hawaii, a statewide committee that promotes life-saving safe sleep techniques, policies and education for parents, teachers, doctors, nurses and other caregivers. Committee members include representatives from the Department of Health, Injury Prevention and Control Program, Department of Education, Department of Human Services, hospitals, the military, child care agencies and the community. The committee utilizes information from various local and national sources, including data from the Hawaii Child Death Review Program. Safe Sleep Hawaii promotes information on safe sleep environments through the distribution of a "Keep Me Safe When I Sleep" handout and DVD. The resources provide information on safe sleeping conditions, including infant positioning, smoke-free environments, optimal sleep clothing, co-sleeping, and firm sleeping surfaces that are free of pillows, toys and soft bedding. For example, domestic violence shelters were surveyed and several were found to have no policy or provision for safe sleep practices. To address the safety gap, educational information was provided and the Hawaii State Coalition Against Domestic Violence decided to purchase portable cribs for use in the shelters. Working with multiple partners, the Safe Sleep Hawaii program supported legislation that was passed requiring child care providers licensed by the State Department of Human Services, which administers Med-QUEST, to receive training in safe sleep. These and other activities have all lead to an increased awareness of the importance of safe sleep in Hawaii. More information can be found on their website at www.safesleephawaii.org.

Discussion

This fact sheet highlights findings from two data sources to provide fatality and risk behavior information to help inform safe sleep practices. The CDR data highlights that the SUID death rate decreased over time, but has seen a recent increase and that the majority of the fatalities occur in a location that is not recommended (e.g., not in a crib, cradle or bassinet). The focus on risk factors as reported in the Pregnancy Risk Assessment Monitoring System (PRAMS) data highlights behaviors in the population of women having a recent live births that specific population subgroups practice unsafe sleep practices. For example, a greater likelihood of non-supine sleep position and non-crib location among various subgroups such as young maternal age and specific race/ethnic groups highlights the importance of working to further raise awareness on safe sleep. Additionally, the findings from review of the circumstances related to infant deaths highlights the importance of focusing on a safe sleep environment, particularly as it relates to not using a crib, cradle, or bassinet and infants sleeping with other people.

It is important to note that having Med-QUEST or participating in WIC did not cause the observed differences; as the association likely reflects the populations of women with higher associated risks that these programs serve. The higher rates of non-supine sleep position and non-crib among mothers who use WIC or are on Med-QUEST insurance, suggest these programs may be a good setting to deliver educational interventions. WIC is evaluating the most effective way to provide education around safe sleep positioning. Additionally, recent efforts to require that licensed child care providers be trained on safe sleep practices.

All who care for mothers and infants should be aware of proper sleep positioning and the other risks such as soft bedding and bed-sharing. Educating mothers and families in the hospital with reinforcement in the outpatient setting may decrease these preventable infant deaths and improve the health of families in Hawaii.

References

- [1] Centers for Disease Control and Prevention (CDC). SUID registry. <https://www.cdc.gov/sids/SUIDAbout.htm>.
- [2] Child Death Review Program, Hawaii State Department of Health, 2000-2016 Infant Death by Cause. Calculations of Office of Health Status Monitoring data.
- [3] Child Death Review Program, Hawaii State Department of Health. A Report from Hawaii Child Death Review 2001-2006. Available online at https://www.ncfrp.org/wp-content/uploads/State-Docs/HI_CDRreport2001-2006.pdf.
- [4] Child Death Review Program, Hawaii State Department of Health. Calculations from Hawaii CDR Program Data.
- [5] Moon RY, Horne RS, Hauck FR. Sudden infant death syndrome. *Lancet*. 2007;370:1578-87.
- [6] AAP Policy Statement. The changing concept of sudden infant death syndrome: diagnostic coding shifts, controversies regarding the sleeping environment, and new variables to consider in reducing risk. *Pediatrics* 2005;116:1245-55.
- [7] 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*. 2016;138(5):e20162938

About the Data

The Hawaii Pregnancy Risk Assessment Monitoring System (PRAMS) is a mixed mode self-reported survey conducted by mail with telephone follow-up of recent mothers. It is designed to monitor the health and experiences of women before, during, and just after pregnancy. Every year, about 2,000 women who deliver a live infant are randomly selected to participate. A non-crib location was defined as not usually placing infant in a crib, cradle, or bassinet to sleep in last month. The Child Death Review Data is managed by the Hawaii State Department of Health, Maternal and Child Health Branch which collects and review information on all child deaths in the State of Hawaii. Regular multi-disciplinary teams review deaths in order to develop recommendations to prevent future child deaths.

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