Safe Sleep, Sudden Unexpected Infant Deaths (SUID) Trends and Risk Factors

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Trends in Number of Infant and Child Deaths, Hawaii Residents, 2009-2016

On average every 2.6 days in 2016 an infant or child dies
- An Infant every 3.4 days
- A child every 11 days

FHSD Calculations of Office of Health Status Monitoring Data, 2016 data is provisional
Infant Mortality Rate in Hawaii, 2001-2016

Rate (per 1,000 live births)

FHSD Calculations from Office of Health Status Monitoring data, 2016 based on provisional data
Infant Mortality Rate By Community, 2004-2013

http://Health.hawaii.gov/fhsd/publications
Leading Causes of Infant Death

Table 1. Leading Causes of Infant Death, United States (2010) and Hawai'i (2009-2011)

<table>
<thead>
<tr>
<th>Leading Causes of Death</th>
<th>United States (per 100,000)</th>
<th>Hawai'i (per 100,000)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Congenital Malformations(^a)</td>
<td>127.7</td>
<td>86.5</td>
</tr>
<tr>
<td>Preterm-related(^b)</td>
<td>105.3</td>
<td>107.7</td>
</tr>
<tr>
<td>SUID(^c)</td>
<td>91.5</td>
<td>58.2</td>
</tr>
<tr>
<td>Maternal Complications(^d)</td>
<td>39.5</td>
<td>58.2</td>
</tr>
</tbody>
</table>

\(^a\)Congenital malformations based on ICD 10 underlying cause of death codes: Q00-Q99
\(^b\)Preterm-related based on ICD 10 underlying cause of death code: P07
\(^c\)Sudden Unexpected Infant Death (SUID) based on ICD 10 underlying cause of death code: R95, R99, and W75. Revised cause of death following guidance of Centers for Disease Control and Prevention SUID Initiative.
\(^d\)Maternal complications of pregnancy based on ICD 10 underlying cause of death code: P01

What is SUID?

- In 2015, about 3,700 sudden unexpected infant deaths in the US. Leading cause of infant death between 1 month and 1 year of age

- SUID is 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 types:
  - Sudden Infant death syndrome (SIDS---ICD code R95)
  - Unknown cause (--ICD code R99)
  - Accidental suffocation and strangulation in bed (ASSB--ICD code W75)

https://www.cdc.gov/sids/SUIDAbout.htm
Summary

- SUID is a leading cause of death nationally and in Hawaii.
- Hawaii Number of SUID deaths (5-20 cases per year) are small and subject to fluctuation.
  - 19 in 2016 compared to 14 in 2015 and 7 in 2014.
- Overall SUID rates appear to be increasing.
  - SIDS (R95) component of the overall rate appears to be declining.
  - However, increases seen in Unknown (R99) and ASSB (W75).
- Concern about overall SUID increasing.
  - Any unique factors in 2014 that may have caused the decline?
  - Concerning that the past 2 years there have been overall increases.
- Other Data needed to clarify and inform decisions?
Hawaii Child Death Review

- Department of Health (DOH) program from 1997-2013
  - Coordinator Positioned Abolished in 2013
- Multi-disciplinary and interagency review of child deaths in the State of Hawaii

**Mission Statement:** Objectives include:

- Analyze causes and circumstances surrounding child deaths
- Recommendations to prevent future child deaths based on risk factors
- Promotes community prevention education activities through collaborative partnerships

- In National Database [http://www.childdeathreview.org](http://www.childdeathreview.org)
Infant Sleep Related Deaths, Hawaii CDR, 2001-2006

- CDR can help describe the circumstances of infant sleep related deaths

- In Hawaii, 118 sleep related infant deaths

- Primary Cause of Death
  - 18% Asphyxia
  - 10% SIDS
  - 72% Other or Undetermined
Some CDR Findings

- 53% were Hawaiian (c/o 32% in population)
- 11% were Pacific Islander (c/o 5%)
- 22% were Asian (c/o 39%)
- 10% were White (c/o 15%)

Hawaii Child Death Review Program data, 2001-2006
Additional CDR Findings

- 76% were not in a crib/bassinette
- 45% were found not back sleeping
- 39% of those in a crib had an unsafe sleep environment (pillows, comforter, toys)
- 65% of those not in a crib were co-sleeping
- 38% the mother smoked during pregnancy
- 85% neglect or abuse caused or probably caused/contributed to death

Hawaii Child Death Review Program data, 2001-2006
Selected CDR Activities related to SUID

- Improving infant death scene investigation trainings
- Collaboration with Safe Sleep Committee
- Expanding CDR data collection instrument
CDR current data and activities

- CDR reinstituted in 2016
- Deaths from 2015 were reviewed
- Prioritizing sleep related deaths for initial round of 2016 death reviews
  - What do we know so far?
18 Sleep related deaths in 2015
- 18 not in a crib or bassinette
- 15 were sleeping with other people
Selected CDR recommendations

• Utilize churches, PCPs, and schools to provide culturally sensitive information on safe sleep practices to parents and extended family members

• Encourage inclusion of information regarding infant sleeping environment as part of follow up calls to parents and newborns by birthing facility staff

• All out of hospital infant deaths should be pronounced in an Emergency Room to facilitate joint investigation with medical examiner, coroner, law enforcement, and physicians.

• The infant’s physician should always be contacted and notified of a death

• Recommend baby boxes be provided for all newborn as a safe sleeping arrangement and to discourage bed sharing

• It is important to invest in a media campaign about safe sleep practices and risk factors
Population Data on Risk Factors

- Hawaii Pregnancy Risk Assessment Monitoring System (PRAMS)
  - Ongoing population-based surveillance system
  - Collects information on maternal behaviors and experiences that occur before, during, and after pregnancy
    - Includes information on sleep positioning from 2000-2015
    - Includes information on bed sharing and infant sleep environment from 2009-2011
    - Includes information on sleep location from 2012-2015

- More information on Hawaii PRAMS, including copies of fact sheets and trend reports:
PRAMS data on Back Sleep Position

- Back sleeping appears (not statistically significant) to be worsening
  - 78.6% in 2014; 82.0% in 2012
  - Now similar to overall national estimate

Data Source: Hawaii PRAMS and 2017 Title V Federally Available Data
Change in PRAMS question in 2012-15

- Added time frame and removed the T/F response
- No longer asking sleep environmental factors
PRAMS data on safe sleep

Position

- Sleeping in crib appears (not statistically significant) to be improving
  - 71.1% in 2014; 68.3% in 2012

<table>
<thead>
<tr>
<th>Sleep Environment</th>
<th>2012 %*</th>
<th>95% CI</th>
<th>2013 %*</th>
<th>95% CI</th>
<th>2014 %*</th>
<th>95% CI</th>
</tr>
</thead>
<tbody>
<tr>
<td>Crib</td>
<td>68.3</td>
<td>(65.0-71.5)</td>
<td>71.6</td>
<td>(68.1-74.8)</td>
<td>71.1</td>
<td>(67.4-74.5)</td>
</tr>
<tr>
<td>Adult bed with another person</td>
<td>29.3</td>
<td>(26.2-32.5)</td>
<td>26.5</td>
<td>(23.4-29.9)</td>
<td>24.5</td>
<td>(21.3-28.0)</td>
</tr>
<tr>
<td>Adult bed alone</td>
<td>NR</td>
<td>NR</td>
<td>NR</td>
<td>NR</td>
<td>NR</td>
<td>NR</td>
</tr>
<tr>
<td>Sofa/Couch</td>
<td>NR</td>
<td>NR</td>
<td>NR</td>
<td>NR</td>
<td>NR</td>
<td>NR</td>
</tr>
<tr>
<td>Car seat/Infant Seat</td>
<td>NR</td>
<td>NR</td>
<td>NR</td>
<td>NR</td>
<td>NR</td>
<td>NR</td>
</tr>
<tr>
<td>Someplace else</td>
<td>1.6</td>
<td>(0.9-2.8)</td>
<td>1.3</td>
<td>(0.6-2.5)</td>
<td>3.4</td>
<td>(2.2-5.4)</td>
</tr>
</tbody>
</table>

*Percentages weighted to reflect state-wide estimates

NR denotes ”Not Reportable” due to small numbers
** Other Asian includes Korean, Vietnamese, Asian Indian, and Other Asian ***All Others includes Puerto Ricans, American Indians, Cubans, Mexicans, and All Others

Source: Hawaii PRAMS 2012-14, Calculations by FHSD
Non-Crib Proportions by Maternal Age, 2012-14

Under 20 years: 46.7%
20-24 years: 35.6%
25-34 years: 26.9%
35 or more years: 27.1%

Source: Hawaii PRAMS 2012-14, Calculations by FHSD
Importance of Sleep Position
Sudden Infant Death Syndrome (SIDS), the sudden, unexpected death of an infant under 1 year of age, is the leading cause of post-neonatal mortality (death between 1 month and 1 year of age). SIDS accounts for 41% of all post-neonatal deaths in Hawai'i.1-2 Putting infants to sleep on their stomach or side, rather than on their back, is a major preventable risk factor for 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. The national Healthy People 2010 goal is to increase the proportion of infants placed on their backs to sleep to 70%.

Data Highlights
• About 1 in 3 mothers place their infants to sleep in a high-risk, non-supine position (side or stomach).
• Mothers more likely to practice a non-supine position were Black, Samoan, Other Pacific Islander, Hawaiian, or Hispanic, younger, less educated, unmarried, unemployed, and Medicaid/QUEST recipients. Married or cohabiting, White, or Native Hawaiian mothers were less likely to practice a non-supine sleep position; staff training may be warranted.
• WIC is an intervention for educational interventions. Mothers with risk factors associated with non-supine sleep are more likely to utilize WIC services.
• In addition to sleep position, educational efforts should address other SIDS risk factors including soft bedding, bed sharing, and smoking.

PRAMS Sleep Position Question
How do you most often lay your baby down to sleep?
- On his or her side
- On his or her back
- On his or her stomach

About 5% of mothers selected multiple responses. For this analysis, mothers who selected only back were considered to practice supine sleep position.

"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."  
-- Hawai'i Grandparent

Hawaii Safe Sleep Quick Facts
Sudden unexpected infant death (SAID) is defined as the death of an infant less than one year of age that occurs suddenly and unexpectedly, and whose cause of death is not immediately known. When the SUID cannot be explained after thorough investigation, it is usually attributed to sudden infant death syndrome (SIDS). More than 4,000 infants die from SUIDs each year in the United States, and about half of those are attributed to SIDS. The leading cause of death among infants aged 1-12 months and the third leading cause of infant mortality overall in the United States. Preventing SUIDs is an important public health issue nationally and in Hawai'i.

Maintaining a safe sleep position and environment can reduce the risk of SUIDs. Here are tips to ensure your baby is safe:
• Place baby on their back for every sleep.
• Use firm sleep surface, such as a safety-approved crib with a mattress that fits the crib, covered with a tightly fitted sheet. Check gracoဖြင့်ပါစွာကစားပါကို။
• Keep sleep in the same room, but not in the same bed, as baby sleeps.
• Keep soft objects and loose bedding out of baby’s sleep area. This includes pillows, blankets, bumper pads, and tules.

There are approximately 30,900 births each year in Hawai'i. The following facts are from the 2009-2013 Hawaii Pregnancy Risk Assessment Monitoring System (PRAMS) survey.

Sleep position
Approximately one-quarter (25%) of births in Hawai'i are in a high-risk sleep position on their side or stomach.

Risk factors:
One-third (33%) of babies in Hawai'i "suffocate" or "suffocated" in the same bed with man or someone else. An additional 20-25% of babies in Hawai'i "sometimes" do.

Sleep environment
Only 45% of babies in Hawai'i usually sleep in an environment that meets all of the AAP’s recommendations for a safe sleep environment. Nearly half (48%) usually sleep in an environment with one or more of the following risk factors:
• 25% sleep with pillows
• 25% sleep with bumper pads
• 30% sleep with plush blankets
• 4-6% sleep with stuffed pets
• 12-15% of infants sleep in a crib with portable crib and
• 14% do not sleep on a firm or hard mattress.

About the data
HPRM is a self-reported survey of recent mothers conducted by mail with telephone follow-up. It is designed to monitor the health and experiences of women before, during, and after pregnancy. Every year in Hawaii, about 2,400 women deliver a live infant and are randomly selected to participate.

Sources
www.motherjams.com
www.hawaiihealth.org
www.hawaiihealth.org
www.childtrends.org
www.hawaiianhealth.org
www.cdc.gov/sids/data.htm
www.childtrends.org
Summary

- Hawaii Child Death Review data highlighted unsafe sleep environment and bed sharing as factors.

- Hawaii PRAMS data highlights behaviors among the state population and opportunities to look at disparate groups.
  - Overall, sustained improvement in back sleep position, but also identifies disparities related to sleep positioning and location

- FHSD programs continue to promote safe sleep activities

- The reinstatement of a child death review process has helped the ability to learn from SUID and other child deaths. Need to act on the recommendations.
Conclusions

• SUID is an important cause of post-neonatal mortality-nationally and in Hawaii.

• Important to look at multiple data sources (Vital Stats, Child Death Review, Pregnancy Risk Assessment Monitoring System).

• Are there other sources of data (e.g., key informant interviews, focus groups, provider surveys) to gather more information to work with providers and the community?
Questions or Comments?

Acknowledgements

Family Health Services Division
Centers for Disease Control and Prevention
Hawaii Safe Sleep Committee

Email: Don.Hayes@doh.hawaii.gov
63. How often does your new baby sleep in the same bed with you or anyone else?

☐ Always
☐ Often
☐ Sometimes
☐ Rarely
☐ Never

64. Listed below are some things that describe how your new baby *usually* sleeps. For each item, circle T (True) if it usually applies to your baby or circle F (False) if it doesn’t usually apply to your baby.

<table>
<thead>
<tr>
<th></th>
<th>True</th>
<th>False</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. My new baby sleeps in a crib or portable crib</td>
<td>T</td>
<td>F</td>
</tr>
<tr>
<td>b. My new baby sleeps on a firm or hard mattress</td>
<td>T</td>
<td>F</td>
</tr>
<tr>
<td>c. My new baby sleeps with pillows</td>
<td>T</td>
<td>F</td>
</tr>
<tr>
<td>d. My new baby sleeps with bumper pads</td>
<td>T</td>
<td>F</td>
</tr>
<tr>
<td>e. My new baby sleeps with plush blankets</td>
<td>T</td>
<td>F</td>
</tr>
<tr>
<td>f. My new baby sleeps with stuffed toys</td>
<td>T</td>
<td>F</td>
</tr>
</tbody>
</table>
74. In the last month, where did your new baby usually sleep?

- In a crib, cradle, or bassinet
- On an adult bed or mattress with me and/or another person(s)
- On an adult bed or mattress alone
- On a sofa or couch
- In a car seat or infant seat
- Someplace else ➔ Please tell us:

______________________________________
56. In the past 2 weeks, how often has your new baby slept alone in his or her own crib or bed?
- Always
- Often
- Sometimes
- Rarely
- Never

Go to Question 58

57. When your new baby sleeps alone, is his or her crib or bed in the same room where you sleep?
- No
- Yes

58. Listed below are some more things about how babies sleep. How did your new baby usually sleep in the past 2 weeks? For each item, check No if your baby did not usually sleep like this or Yes if he or she did.

<table>
<thead>
<tr>
<th>Item</th>
<th>No</th>
<th>Yes</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. In a crib, bassinet, or pack and play</td>
<td></td>
<td></td>
</tr>
<tr>
<td>b. On a twin or larger mattress or bed</td>
<td></td>
<td></td>
</tr>
<tr>
<td>c. On a couch, sofa, or armchair</td>
<td></td>
<td></td>
</tr>
<tr>
<td>d. In an infant car seat or swing</td>
<td></td>
<td></td>
</tr>
<tr>
<td>e. In a sleeping sack or wearable blanket</td>
<td></td>
<td></td>
</tr>
<tr>
<td>f. With a blanket</td>
<td></td>
<td></td>
</tr>
<tr>
<td>g. With toys, cushions, or pillows, including nursing pillows</td>
<td></td>
<td></td>
</tr>
<tr>
<td>h. With crib bumper pads (mesh or non-mesh)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

59. Did a doctor, nurse, or other health care worker tell you any of the following things? For each thing, check No if they did not tell you or Yes if they did.

<table>
<thead>
<tr>
<th>Thing</th>
<th>No</th>
<th>Yes</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. Place my baby on his or her back to sleep</td>
<td></td>
<td></td>
</tr>
<tr>
<td>b. Place my baby to sleep in a crib, bassinet, or pack and play</td>
<td></td>
<td></td>
</tr>
<tr>
<td>c. Place my baby’s crib or bed in my room</td>
<td></td>
<td></td>
</tr>
<tr>
<td>d. What things should and should not go in bed with my baby</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>