Reducing SUIDs Through Safe Sleep Interventions: What's next for Florida?

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Introduction

The University of South Florida (USF) Chiles Center for Healthy Mothers and Babies research team partnered with the Florida Department of Health to conduct a snapshot evaluation of interventions currently being conducted in Florida to reduce sleep-related infant deaths. A multi-systems approach was used to determine the location and types of safe sleep interventions.

A comprehensive literature review of published studies was conducted to examine international and U.S. intervention approaches including parent education, hospital-based interventions, and child care settings to reduce sleep-related infant deaths. Additionally, policies regarding specific laws for the prevention of Sudden Infant Death Syndrome (SIDS) and Sudden Unexpected Infant Death (SUID) were reviewed. Marketing and awareness campaigns were also scanned to examine the evolution of public campaigns related to reducing sleep-related infant deaths. The Florida evaluation included consultation with an advisory council, participation in the Healthy Start Coalition state meeting and the Florida Public Health Association conference, and interviews and focus groups with ten groups in seven communities.

Background

Defining SIDS & SUIDs

SUID is the sudden and unexpected death (explained or unexplained) of an infant in the first year of life (Task Force on Sudden Infant Death & Moon, 2011). Entrapment, suffocation, asphyxia, metabolic disease, both intentional and unintentional trauma, cardiac arrhythmias, ingestion, infections, and SIDS are causes that may result in the sudden death of an infant (Task Force on Sudden Infant Death Syndrome & Moon, 2011). The Centers for Disease Control and Prevention (CDC) (2016) defines SIDS as the "sudden death of an infant less than one 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."

There are approximately 3,500 SUID cases each year in the United States. In 2014, 44% of these deaths occurred due to SIDS, 31% to unknown causes, and 25% to accidental suffocation and strangulation in bed (ASSB). Following the release of the American Academy of Pediatrics (AAP) safe sleep recommendations in 1992 and the subsequent Back to Sleep campaign in 1994, the SUID death rate declined considerably. Specifically, infant deaths due to SIDS declined from 130.3 deaths per 100,000 live births in 1990 to 38.7 deaths per 100,000 live births in 2014. However, accidental suffocation and strangulation rates have been on the rise since 1998, reaching its highest rate (21.4 deaths per 100,000 live births) in 2014 (CDC, 2016).

Populations at risk for sleep-related infant deaths have been noted in previous research. African American mothers are more likely (62.5%) than Caucasian mothers (25.7%) or Hispanic mothers (33.3%) to experience a sleep-related infant death (Colson, 2013; Hogan, 2014). Prematurity, low birth weight, maternal age less than 20 years, smoking during pregnancy, multiparity, inadequate prenatal care (Hakeem, 2015), maternal education less than 12 years, maternal consumption of alcohol during pregnancy specifically binge drinking during the 1st trimester (Iyasu, et al, 2002), passive smoking, substance abuse, and short inter-pregnancy intervals (Athanasakis, 2011) have been associated with a higher risk for SIDS whereas breastfeeding is reported to be protective for SIDS (Shamberger, 2014; Vennemann, 2009).

Analysis of Trends and Risk/Protective Factors for SUID in Florida

The objectives of this analysis were to: 1) assess trends in SUIDs for the state of Florida from 2005 –2015; 2) examine SUID trends by its subcategories (SIDS, ASSB, unknown causes of SUID), race, and ethnicity in Florida from 2005 – 2015; 3) determine SUID rates in Healthy Start Coalitions in Florida among infants born alive during 2010 – 2014; and 4) identify various risk/protective factors for SUID in Florida among infants born alive during 2010 – 2014. Data from Florida Vital Statistics birth and infant death records were used for these analyses. Additionally, the rates for SUID by ethnicity were obtained from Florida CHARTS (Florida Department of Health, n.d.). For the trend analysis, birth and infant death records for 2005 -2015 were used and for determining the risk/protective factors for SUID and rates for the different Healthy Start Coalitions, birth records for 2010-2014 and infant death records for 2010-2015 were utilized.

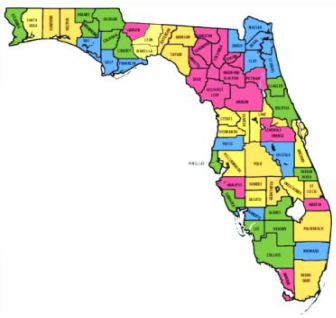
Variables for Analysis

Ascertainment of SUID cases. SUID cases were identified by using the International Statistical Classification of Diseases and Related Health Problems, Tenth Revision (ICD -10) code: SIDS (ICD -10: R99), ASSB (ICD -10: W75), and unknown causes (ICD – 10: R99). SUID rate was calculated as: number of infant deaths due to SUID for each time period/total number of live births during the same time period*1000.

Other variables. Maternal and paternal race were categorized into White, Black, American-Indian/Alaska Native (AIAN), Asian/Pacific Islander, and other racial groups with white as the referent category. Maternal and paternal ethnicity were categorized as Hispanic or non-Hispanic (referent category). Maternal age was divided into five categories: <20 years, 20 -24 years, 25 -29 years (referent category), 30-34 years, and 35-50 years and observations with age >50 years were excluded. Maternal education was classified into: less than high school (referent group), high school degree/GED/some college, associate/bachelor's degree, and graduate degree. Marital status was divided into two categories: not married (referent group) and married. Prepregnancy body mass index was categorized into: underweight (referent category), normal, overweight, and obese. Maternal consumption of alcohol, maternal smoking during pregnancy, interpregnancy interval less than 18 months, infant born in a hospital, C-section, prematurity, low birth weight, and ever breastfed were all dichotomized as "Yes" and "No". Adequacy of receipt of prenatal care was based on the Kotelchuck index and adequate prenatal care was defined as anyone who belonged to the categories: adequate or adequate plus. Plurality was categorized as singleton and multiple, and infant sex as male (referent group) and female. An additional variable that was included for the trend analysis was one that indicated whether the infant died during the neonatal period or postneonatally.

The counties were grouped into their respective Healthy Start Coalition regions (N =33) (http://healthystartflorida.com). These regional coalitions work collectively in their communities to support maternal, child and family health by:

- Mobilizing multiple sectors of the public and private sectors
- Leveraging millions of dollars to improve programs and services for families
- Aligning efforts with the Florida legislature to keep them informed of the needs of its residents
- Serving as a resource for national maternal and child health initiatives for dissemination
- Conducting assessment of best practices and trends to transfer knowledge among members and constituents



Florida Healthy Start Coalitions by County
http://healthystartflorida.com

Statistical Analysis

The Joinpoint regression was used to assess trends in SUIDs for the state of Florida from 2005–2015. MS - Excel was used to plot SUID trends by its

subcategories (SIDS, ASSB, unknown causes of SUID), race, and ethnicity. The vital statistics birth records were linked to infant death records. The poisson regression (crude and multivariable) was used to identify various risk/protective factors for SUIDs and all variables listed above were entered into the multivariable model. The model was examined for overdispersion and since the deviance/degree of freedom did not exceed one, the poisson model was utilized for calculating the risk for SUID. All analyses were conducted using SAS 9.4 (SAS Institute Inc., 2013) except the joinpoint analyses for which purpose the Joinpoint Trend Analysis Software of the Surveillance, Epidemiology, and End Results (SEER) Program of the National Cancer Institute were used (National Cancer Institute, 2016) and MS-Excel for plotting trends by various categories.

Results

The sample consisted of 795,170 infants, out of which 535 had died due to SUID. This resulted in a SUID rate of 0.67 per 1,000 live births for the state of Florida during 2010-2014

Trends

A trend analysis of SUID rates for the State of Florida showed a significant decline from 2005–2015. However, this decrease was only 1.5% during this period. Intermixed with this trend were intermittent peaks for three years (2007, 2010, 2013) (See Figure 1).

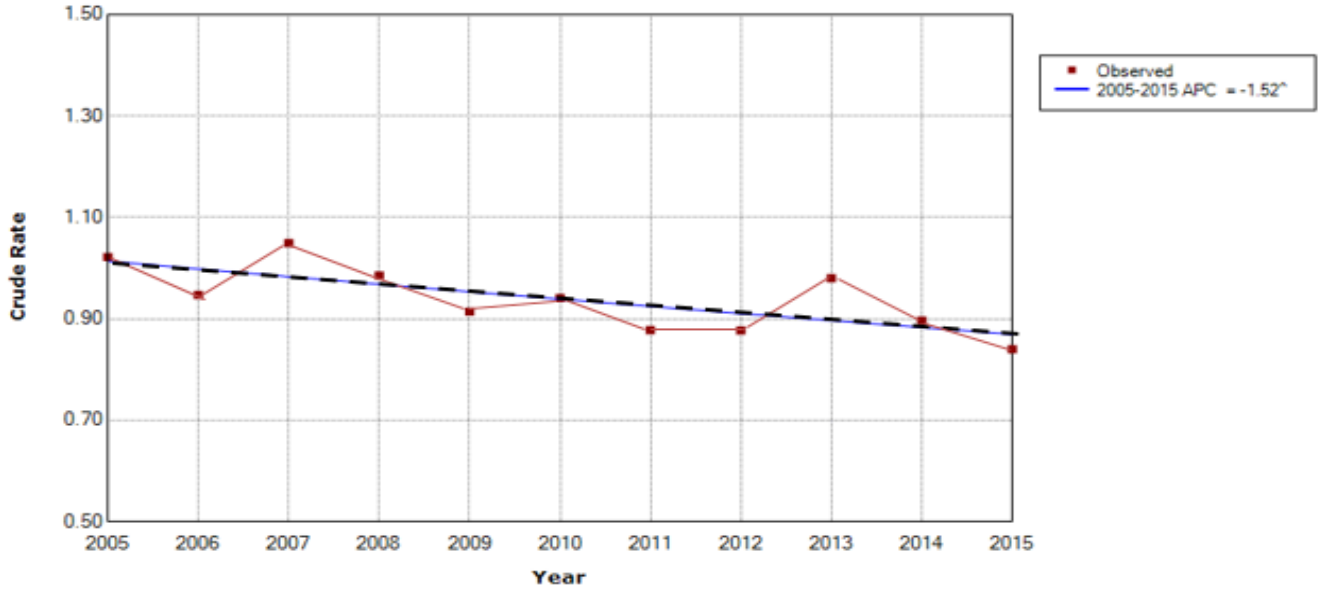


Figure 1. Trend for Sudden Unexpected Infant Death Rates (per 1,000 Live Births) in Florida: 2005 -2015

The trend for SUID by its sub-categories was not linear and showed numerous peaks and declines intermittently. SIDS and unknown causes for SUID showed a decreasing trend; however, the trend for ASSB showed an increase with a sharp peak in 2013 after which there was a sharp decline (See Figure 2). As expected, the highest rates of SUID was during the postneonatal period with a relatively stable pattern in the rates from 2005-2015 (See Figure 3).

The rates for all races have remained relatively stable from 2005-2015, except for American-Indians /Alaska Natives; however, this should be interpreted with caution since there were few infants in this racial group (See Figure 4). In 2005, the highest rate was for Black infants and in 2015 American-Indian/Alaska Native infants had the highest rate followed by Black infants. Once again, the small sample size for the American-Indian/Alaska Native group should be noted. The trend for ethnicity indicated that SUID rates among non-

Hispanic infants has remained higher than Hispanic infants since 2005 and the gap between these groups has hardly narrowed (See Figure 5).

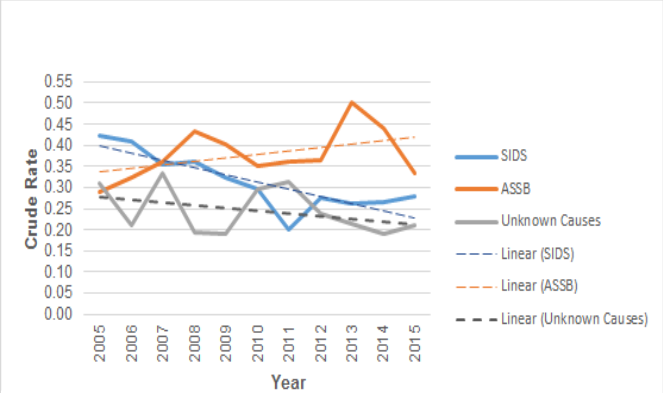


Figure 2. Trends in Sudden Unexpected Infant Deaths (per 1,000 Live Births) In Florida by Cause: 2005 -2015

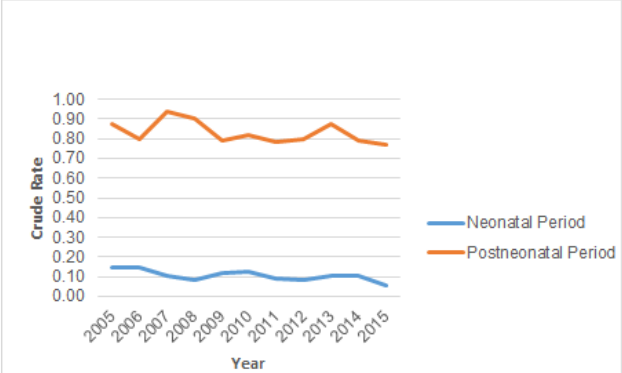


Figure 3. Trends in Sudden Unexpected Infant Deaths (per 1,000 Live Births) in Florida by Timing of Death: 2005 - 2015

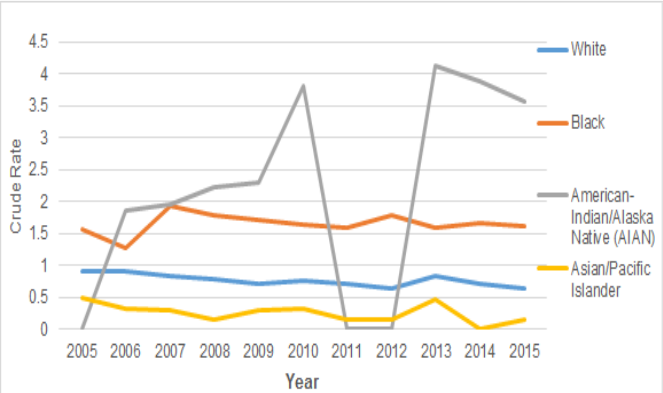


Figure 4. Trends in Sudden Unexpected Infant Death Rates (per 1,000 Live Births) in Florida by Race: 2005 - 2015

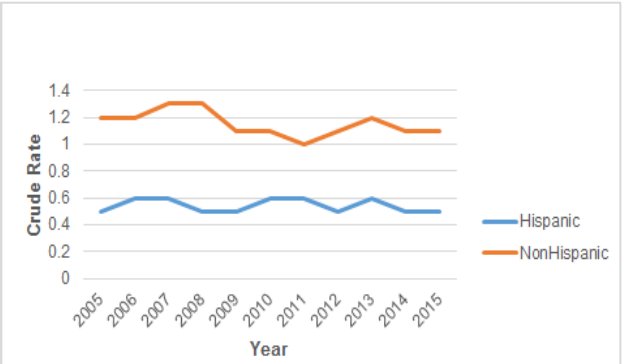


Figure 5. Trends in Sudden Unexpected Infant Death Rates (per 1,000 Live Births) In Florida by Hispanic Ethnicity: 2005 -2015

Compared to the overall SUID rate of 0.67 per 1,000 live births for the state of Florida during 2010-2014, the SUID rates compiled by Healthy Start Coalition regions (in decreasing order) for the 2010 to 2014 birth cohort, as displayed in Table 1, illustrate that 18 regions (covering 47 counties) had higher rates than the state average; however, none of the coalitions had rates that were statistically significant. The two Healthy Start Coalition regions with the highest SUID rates were Gadsden County Healthy Start Coalition, Inc. and Healthy Start Coalition of Jefferson, Madison, and Taylor Counties (See Table 1). However, these rates were based on small numbers and therefore should be interpreted with caution.

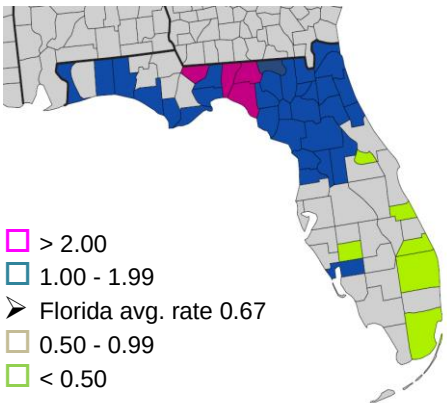


Figure 6. SUID Rate by Healthy Start Coalition Region

Table 1. Sudden Unexpected Infant Death (SUID) Rates by Healthy Start Coalitions (by decreasing rates), 2010 - 2014 Birth Cohort

Healthy Start Coalition (N =33)	Counties (N =67)	Total Live Births (795,167)	Deaths (N =535)	Rate per 1,000 Live Births (95% CI)
Gadsden County Healthy Start Coalition, Inc.	Gadsden	1,516	4	2.64 (0.99, 7.03)
Healthy Start Coalition of Jefferson, Madison, and Taylor Counties	Jefferson, Madison, Taylor	1,499	3	2.00 (0.65, 6.21)
Central Florida Healthy Start Coalition	Lake, Sumter, Citrus, Hernando	22,701	30	1.32 (0.92, 1.89)
Charlotte County Healthy Start Coalition, Inc.	Charlotte	3,968	5	1.26 (0.52, 3.03)
Healthy Start of Bay, Franklin, and Gulf Counties	Bay, Franklin, Gulf	7,805	9	1.15 (0.60, 2.22)
Capital Area Healthy Start Coalition, Inc.	Leon, Wakulla	10,674	12	1.12 (0.63, 1.98)
Healthy Start of North Central Florida Coalition	Hamilton, Suwannee, Lafayette, Columbia, Union, Bradford, Putnam, Alachua, Dixie, Gilchrist, Levy, Marion	35,615	39	1.10 (0.80, 1.50)
Healthy Start Community Coalition of Okaloosa and Walton Counties	Okaloosa, Walton	13,063	14	1.07 (0.63, 1.81)
Northeast Florida Healthy Coalition, Inc.	Baker, Nassau, Duval, Clay, St Johns	65,039	65	1.00 (0.78, 1.27)
Escambia County Healthy Start Coalition	Escambia	13,130	13	0.99 (0.57, 1.71)
Chipola Healthy Start Coalition	Holmes, Jackson, Washington, Calhoun, Liberty	3,115	3	0.96 (0.31, 2.99)
Healthy Start Coalition of St Lucie County, Inc.	St Lucie	11,833	11	0.93 (0.51, 1.68)
Healthy Start Coalition of Flagler and Volusia Counties	Flagler, Volusia	19,838	17	0.86 (0.53, 1.38)
Healthy Start Coalition of Pasco County	Pasco	18,399	15	0.82 (0.49, 1.35)
Healthy Start Coalition of Manatee County, Inc.	Manatee	13,719	10	0.73 (0.39, 1.35)
Healthy Start Coalition of Hillsborough County, Inc.	Hillsborough	60,640	43	**0.71 (0.53, 0.96)**
Florida Keys Healthy Start Coalition	Monroe	2,881	2	0.69 (0.17, 2.78)
Healthy Start Coalition of Osceola County	Osceola	14,465	10	0.69 (0.37, 1.28)
Healthy Start Coalition of Pinellas, Inc.	Pinellas	31,332	21	0.67 (0.44, 1.03)
Healthy Start Southwest Florida	Lee, Glades, Hendry, Collier	40,843	26	**0.64 (0.43, 0.93)**
Healthy Start Coalition of Hardee, Highlands, and Polk Counties	Hardee, Highlands, Polk	32,208	19	**0.59 (0.38, 0.92)**
Healthy Start Coalition of Orange County	Orange	57,186	33	**0.58 (0.41, 0.81)**
Broward Healthy Start Coalition	Broward	78,081	44	**0.56 (0.42, 0.76)**
Healthy Start Coalition of Brevard County	Brevard	19,673	11	0.56 (0.31, 1.10)
Healthy Start Coalition of Santa Rosa County, Inc.	Santa Rosa	7,195	4	0.56 (0.21, 1.48)
Okeechobee County Family Health/Healthy Start Coalition, Inc.	Okeechobee	2,001	1	0.50 (0.07, 3.55)
Healthy Start Coalition of Sarasota County, Inc.	Sarasota	11,275	5	0.44 (0.18, 1.07)
Healthy Start Coalition of Seminole County	Seminole	17,667	7	0.40 (0.19, 0.83)
Healthy Start Healthy Beginnings Coalition of Palm Beach County, Inc.	Palm Beach	53,474	20	**0.37 (0.24, 0.58)**
Healthy Start Coalition of Miami-Dade	Miami – Dade	114,013	38	**0.33 (0.24, 0.46)**
Indian River County Healthy Start Coalition	Indian River	4,001	1	0.25 (0.04, 1.77)
Desoto County Healthy Start	Desoto	1,359	0	0.00
Martin County Healthy Start Coalition	Martin	4,959	0	0.00

Note: Births from 2010 -2014 linked to infant death records
Total number of live births do not add to 795,170 due to missing values
Desoto is a County Health Department that functions as a Healthy Start Coalition.
Abbreviations: CI = Confidence Interval

Risk/Protective Factors for SUID

The adjusted poisson regression model found maternal smoking during pregnancy, interpregnancy interval <18 months, and low birth weight to be risk factors for SUID whereas advanced maternal age, paternal race (other racial groups), maternal and paternal Hispanic ethnicity, high school/GED/some college, higher maternal education, being married, infant being female, and ever breastfed as protective factors for SUID (Table 2). Infants of mothers who smoked during pregnancy had a 96% higher risk for SUID. Furthermore, an interpregnancy interval <18 months was associated with an 81% higher risk for SUID and an infant who was born low birth weight had more than a two times higher risk for SUID compared to an infant of normal weight. Infants of mothers who were 35-50 years old were less likely to have suffered an unexpected death compared to infants of mothers who were <20 years old. The only race category that was a significant protective factor for SUID was other racial category for dads. Hispanic mothers were 47% less likely to have experienced a SUID loss compared to non-Hispanic mothers. Likewise, fathers who were Hispanic were less likely to have infant with SUID. There was a dose-response relationship between maternal age and SUID; the protective effect was greater with advanced age. Mothers with high school/GED/some college education were 21% less likely to have an infant die unexpectedly compared to mothers with less than high school education. Mothers with an associate/bachelor's degree and graduate degree were 57% and 69%, respectively, less likely to have suffered the loss of an infant suddenly and unexpectedly. The mother being married was associated with a 52% lower risk for SUID compared to not being married. An infant being female was associated with a 31% lower risk for SUID compared to being male. An identical protective effect was found for infants who had been breastfed compared to infants who were not (See Table 2).

Table 2. Risk Ratios of Sudden and Unexpected Infant Deaths by Maternal and Child Characteristics in Florida), 2010 - 2014 Birth Cohort

Characteristic	Total Live Births	Cases	Crude Risk Ratio (95% CI)	Adjusted[a] Risk Ratio (95% CI)
Maternal age (years)				
<20	44,311	66	1.82 (1.38, 2.39)	1.13 (0.84, 1.51)
20-24	27,258	29	1.30 (0.88, 1.91)	0.83 (0.56, 1.23)
25-29	184,789	220	Reference	Reference
30-34	241,545	144	0.73 (0.59, 0.89)	0.91 (0.74, 1.12)
35-50	194,143	60	0.38 (0.28, 0.50)	**0.62 (0.47, 0.83)**
Maternal Race				
White	603,821	347	Reference	Reference
Black	143,283	169	2.05 (1.70, 2.47)	0.93 (0.67, 1.29)
American Indian/Alaska Native	1,034	0	NA	NA
Asian/Pacific Islander	19,501	13	1.16 (0.67, 2.02)	0.96 (0.53, 1.73)
Other race	27,531	6	0.38 (0.17, 0.85)	1.10 (0.44, 2.66)
Paternal Race				
White	586,184	316	Reference	Reference
Black	164,804	203	2.28 (1.92, 2.73)	1.36 (0.99, 1.86)
American Indian/Alaska Native	1,044	1	1.78 (0.25, 12.65)	1.30 (0.18, 9.30)
Asian/Pacific Islander	19,416	13	1.24 (0.71, 2.16)	1.14 (0.63, 2.10)
Other race	23,722	2	0.16 (0.04, 0.63)	**0.19 (0.04, 0.90)**
Maternal Ethnicity				
Non-Hispanic	534,681	450	Reference	Reference
Hispanic	257,190	83	0.38 (0.30, 0.48)	**0.53 (0.38, 0.73)**
Paternal Ethnicity				
Non-Hispanic	535,268	442	Reference	Reference
Hispanic	255,946	91	0.43 (0.34, 0.54)	**0.69 (0.50, 0.94)**
Maternal Education				
Less than High School	97,098	124	Reference	Reference
High School/GED/Some College	383,004	330	0.68 (0.55, 0.83)	**0.79 (0.64, 0.99)**
Associate/Bachelor's Degree	238,152	66	0.22 (0.16, 0.29)	**0.43 (0.31, 0.61)**

Table 2. Risk Ratios of Sudden and Unexpected Infant Deaths by Maternal and Child Characteristics in Florida), 2010 - 2014 Birth Cohort (continued)

Maternal Education				
Graduate Degree	73,787	12	0.13 (0.07, 0.23)	**0.31 (0.17, 0.58)**
Marital Status				
Not Married	307,035	369	Reference	Reference
Married	488,125	166	0.28 (0.24, 0.34)	**0.48 (0.39, 0.60)**
Prepregnancy Body Mass Index (lb/(in)^{2}x703)				
Underweight (< 18.5)	33,808	35	1.64 (1.13, 2.37)	1.16 (0.80, 1.68)
Normal (18.5 – 24.9)	39,156	18	Reference	Reference
Overweight (25.0 – 29.9)	375,004	218	0.92 (0.74, 1.14)	0.92 (0.75, 1.15)
Obese (≥ 30.0)	161,460	140	1.37 (1.09, 1.73)	1.19 (0.94, 1.50)
Maternal Consumption of Alcohol during Pregnancy				
No	791,522	533	Reference	Reference
Yes	3,191	2	0.93 (0.23, 3.73)	0.59 (0.15, 2.38)
Maternal Smoking during Pregnancy				
No	751,422	434	Reference	Reference
Yes	41,552	99	4.12 (3.32, 5.13)	**1.96 (1.54, 2.50)**
Interpregnancy Interval < 18 Months				
No	628,330	351	Reference	Reference
Yes	166,840	184	1.97 (1.65, 2.36)	**1.81 (1.51, 2.17)**
Prenatal Care (Kotelchuck Index)				
Not Adequate	196,010	181	Reference	Reference
Adequate	599,160	354	1.01 (0.93, 1.10)	0.83 (0.69, 1.00)
Infant Born in Hospital				
No	14,284	11	Reference	Reference
Yes	780,740	524	0.87 (0.47, 1.58)	0.62 (0.34, 1.14)
Cesarean Section				
No	492,862	357	Reference	Reference
Yes	302,079	178	0.81 (0.68, 0.97)	0.84 (0.70, 1.02)
Plurality				
Multiple	25,136	22	Reference	Reference
Singleton	769,987	513	0.76 (0.50, 1.17)	0.90 (0.56, 1.42)
Infant Sex				
Male	407,796	319	Reference	Reference
Female	387,373	216	0.71 (0.60, 0.85)	**0.69 (0.58, 0.82)**
Premature				
No	722,812	448	Reference	Reference
Yes	72,358	87	1.94 (1.54, 2.44)	1.12 (0.82, 1.54)
Low Birth Weight				
No	735,803	444	Reference	Reference
Yes	59,356	91	2.54 (2.03, 3.18)	**2.04 (1.49, 2.78)**
Ever Breastfed				
No	114,438	174	Reference	Reference
Yes	678,137	359	0.35 (0.29, 0.42)	**0.69 (0.57, 0.83)**

CI = confidence interval
Frequencies may not add to the total and percentages may not add to 100% due to missing data
[a]Adjusted for all other variables listed in the table
2010 – 2014 births linked to infant death records
BOLD indicate statistically significant findings in the adjusted model

Summary

The trend analyses of SUIDs among infants born from 2005-2015 shows that overall the trend attributed to SUIDs is declining, but at a slow pace, with peaks in between. This finding indicates we need to still be vigilant about SUIDs and understand that a single year with a high rate may throw off the trend completely. Asian/Pacific Islander and White infants have the lowest SUID rates from 2005-2015. Since 2005, the rates among non-Hispanic infants have remained higher than Hispanic infants. The examination of trends show that the leading cause of SUIDs has changed over the years.

The possible reasons cited for changes in rates of subcategories of SUIDs without a change in the overall SUID rate are deaths being classified as: ASSB when a risk factor like bed-sharing is consistent with possible

asphyxia; "unknown causes of SUID" if postmortem findings are inconclusive; SIDS only if all components of the definition of SIDS are present (Hunt, Darnall, McEntire, & Hyma, 2015). Maternal smoking during pregnancy and interpregnancy interval < 18 months are modifiable risk factors. Interventions should focus on improving these factors along with safe-sleep recommendations. Breastfeeding should be encouraged as it is not only the gold standard for infant nutrition but also a protective factor for SUIDs. Safe sleep interventions tailored to non-Hispanic mothers with less than a high school education, non-Hispanic fathers, and single mothers may be needed to help reduce SUIDs.

Analysis results: Factors associated with SUIDs rates	
Protective Factors	Risk Factors
• Maternal age 35-50 • Paternal race - Other • Maternal ethnicity – Hispanic • Maternal education – HS/GED, College, Graduate Degree • Mother - Married • Female infant • Infant ever breastfed	• Maternal smoking during pregnancy • Interpregnancy interval <18 months • Low birth weight

Review of the Literature: Safe Sleep Interventions

A systematic literature review of global interventions to prevent sleep-related deaths published from 1990-2015 found that demographic differences between subgroups impact the efficacy of these interventions, as well as the timing (antenatal and postnatal) (Ward, 2016). The authors concluded that new interventions should target specific demographics and experiment with timing to improve effectiveness. They also found that most of the interventions included multiple components; for example, family-focused interventions used print educational materials, visual displays, laminated "Back to Sleep" crib cards, a safe sleep poem, videos/DVDs, provision of cribs or portable cribs, pacifiers, wearable blankets, and "This Side Up" infant T-shirts. Ward (2016) called for more longitudinal and randomized controlled trial (RCT) studies, especially on maternal depression, interventions with fathers, and the role of breastfeeding in co-sleeping.

Educational interventions are common across countries and demographics, often with mixed evaluation results. For example, an antenatal educational campaign targeting Turkish immigrants in the Netherlands was effective at increasing knowledge and short-term SIDS prevention behaviors, but found no effect for maternal smoking, maternal depression, or long-term SIDS prevention behaviors (Hesselink, 2012). Similarly, an education campaign in Argentina with mothers and infants at 60 days of life was effective at improving practices of co-sleeping, back to sleep practices, and breastfeeding. Yet, it was not effective at addressing maternal smoking, pacifier use, or bedroom sharing (Rivarola, 2016). A study in France suggested that formative evaluation can be used to improve SIDS knowledge and adherence to safe sleep practices when paired with an educational intervention (D'Halluin, 2011). By testing mothers about SIDS knowledge before implementing an education session, the study found that after three months, mothers knew more and had better compliance with recommendations than mothers who were given the intervention without a formative evaluation.

High-risk groups are often targeted for SIDS interventions. An effective program in New Zealand introduced Wahakuras (bassinets made from local materials) to reduce risk associated with bed sharing among Maoris (Abel, 2015). The program was widely received as culturally sensitive and practical in the community. In the US, "Moses baskets" have also been used in some communities, though research on their use and effectiveness is lacking. Additionally, though not reported in the literature, the Finnish baby boxes have been promoted in the media (http://www.bbc.com/news/magazine-35834370) as being effective in reducing rates of sleep-related deaths in Finland. The Finnish baby box, as it is popularly called, consists of a starter kit of clothes, sheets, and toys and a small mattress at the bottom of the box that is given to all new mothers irrespective of socioeconomic status. Variants of this box are used in different

parts of the world, including South Africa, India, UK, and Canada. The Finnish baby boxes were a driving force behind the baby box movement currently on the rise in the United States. However, there is no empirical research on their impact on safe sleep or SUIDs prevention. Studies are currently underway in Pennsylvania, Texas, Calgary, and elsewhere to examine their use in hospital settings.

Safe Sleep Parent Education Interventions

Parent education interventions have employed various strategies and programs to address safe infant sleep among caregivers. In a study by Ahlers-Schmidt et al. (2014a), a Safe Sleep Toolkit was provided to caregivers at both an obstetrical clinic and a pediatric clinic. The focal point of this toolkit was a four-item, paper-based checklist (Child Care Checklist) addressing safe sleep practices. Based on the results from this study, it was found that the majority of parents were aware of the AAP recommendations for safe sleep location and position, but an emphasis was needed for the removal of unsafe items as well as communication of safe sleep practices to other caregivers. Ahlers-Schmidt and colleagues (2014b) additionally investigated the impact of Community Baby Showers for African American women. The Community Baby Showers provided direct educational counseling for SIDS prevention as well as portable pack-n-plays for attendees. According to the results, Community Shower participants were knowledgeable about safe sleep following the shower, but needed clarification about room-sharing versus bed-sharing. Another study by Ahlers-Schmidt et al. (2016) evaluated the effectiveness of providing a wearable blanket with a safe sleep message to increase safe sleep practices among caregivers at a pediatric clinic. However, despite the provision of a wearable blanket, there was no improved adherence to safe sleep guidelines.

Burd and colleagues (2007) conducted a community-based study examining SIDS risk reduction by incorporating an educational intervention within a home visiting program as well as in the obstetrics department in a community hospital. Health educators led these educational sessions for groups of three to ten parents. Participants also received a blanket and handout both with graphics of SIDS risk factors. Following the intervention, there were significant increases in safe sleep knowledge at both study sites.

Because of the persistent Black-White racial disparity in SUID rates, several interventions have been developed or tailored specifically to the African-American/Black communities. A study by Moon et al. (2004) investigated the effectiveness of a 15-minute educational intervention for changing sleep practices among black parents. Rasinski and colleagues (2003) studied safe sleep practices after an educational campaign for black communities. Educational presentations targeted high-risk communities and took place at the Supplementary Women, Infants, and Children clinic, health care clinics, high schools, churches, and health fairs. It was found that instruction of safe sleep practices by a nurse or physician influenced the behavior of parents after hospital discharge.

Several safe sleep interventions delivered in hospitals have demonstrated success in promoting adherence to safe sleep practices within the hospital setting and also among parents in the home post-discharge. In an article by Voos et al. (2015), a multifaceted approach was used to improve compliance of safe sleep practices in the Neonatal Intensive Care Unit (NICU) including: revision of the NICU's policy on safe sleep incorporating the updated AAP recommendations, education and training for staff, bedside education provided to families by nurses, and safe sleep observation rounds utilizing a safe sleep checklist. Gelfer et al. (2013) used a similar approach to improve compliance of safe sleep practices in the NICU while also looking at the effects nurses had on parental behavior at home, observing that nurses significantly impacted parental behavior regarding

strictly following safe sleep practices (23% vs. 82%) once discharged from the hospital. Another study noted a significant increase in overall safe sleep compliance from pre- to post-intervention (25.9% vs 79.7%) following nursing education and in-person training, crib cards describing safe sleep practices attached to each crib, and crib audits examining adherence to safe sleep practices in a Level III NICU (Hwang, 2015). The effectiveness of a hospital-based safe sleep education program was examined with the results indicating an improvement in the intentions of parents to comply with the AAP SIDS reduction guidelines at home. Knowledge of and compliance with safe sleep guidelines was high in the intervention group compared to that of parents represented in the National Infant Sleep Position Study (Goodstein, 2015).

Safe Sleep Childcare Interventions

As Americans are working more and more to counteract financial burdens, two-thirds of US infants are in some form of child care; the average amount of time an infant will spend in child care is 22 hours per week (Moon, Calabrese, & Aird, 2008). With maternity leave often lasting 6-8 weeks, infants are being placed into non-parental child care at a time when they are the most vulnerable to SIDS - between two and three months of age (Matthews & Moore, 2013). Approximately 20% of deaths attributed to SIDS occur while the infant is in child care (Moon, Patel, & Shaefer, 2000) with many of these deaths occurring during the first week of child care, often in the first day or two (Kiechl-Kohlendorfer & Moon, 2008) and more deaths occurring in family child care (12.2%) and child care centers (2.6%) combined compared to being at home with a nanny/babysitter or a relative (5.6%) (Moon, Patel, & Shaefer, 2000). Despite the decreases in SIDS deaths overall, the rate of SIDS deaths in child care centers has remained fairly constant at 20% (Moon, Kotch, & Aird, 2006), despite the updated 2011 recommendations of the AAP on sleeping position and a safe sleeping environment for the infant. These guidelines focus on a safe sleeping environment that includes removing bumper pads; removing all loose bedding; blankets; stuffed animals; pillows; and strict avoidance of co-sleeping with other adults, children, and animals (Matthews & Moore, 2013).

There are various theories concerning why infants are at increased risk for SIDS when placed into a child-care center. Many deaths can be attributed to infants being placed in the prone, versus supine, sleep position. The risk escalates when the child is not used to being placed into the prone position to sleep (Moon, Calabrese, & Aird, 2008). The unaccustomed prone position is found to occur more in child-care settings outside the home, and initial recommendations for side sleeping were later found to increase the risk of SIDS two-fold compared to supine sleeping position (Hunt & Hauck, 2006). Soft bedding, pillows, comforters, and other soft fluffy bedding have been associated with a 2-3-fold increased risk of SIDS (Hunt & Hauck, 2006). Combinations of these risk factors result in an even higher synergetic risk; for example, soft bedding and sleeping in the prone position increase the risk for SIDS 20-fold (Hunt & Hauck, 2006). A recent longitudinal study in San Diego County was conducted from 1991 to 1993, before the Back to Sleep campaign began, and from 1996 to 2008 after the AAP's campaign was initially launched. While the number of infants found prone, who were classified as dying from SIDS, decreased overall, almost all the infants (99%) had multiple risk factors: one intrinsic risk factor (such as sex, prematurity, or pre/post-natal exposure to cigarettes or alcohol) and two extrinsic factors (e.g. soft bedding, prone sleeping, crib bumpers, or co-sleeping) (Matthews & Moore, 2013). The study highlighted the importance of both sleeping position and a safe environment. There is an assortment of reasons given why child-care workers have not been consistently placing infants into the supine position to sleep. These reasons are stated as lack of awareness of the correct sleeping position, concerns about the perceived risk of sleeping supine, and lack of empowerment when it comes to the parent's decisions as to which sleeping position the parent prefers (Moon, Kotch, & Aird, 2006). Many parents and child-care workers have concerns over an infant's chances of vomiting and choking while sleeping in the supine position versus the prone position. Evidence suggests the opposite though: infants in

the prone position are at higher risk of regurgitation and choking than those in the supine position (Hunt & Hauck, 2006). Socioeconomic and demographics also increase an infant's risk of SIDS while in non-parental childcare. Lower socioeconomic backgrounds and various racial backgrounds (such as black, Asian, and Alaskan) increase an infant's risk for dying of SIDS (Hunt & Hauck, 2006). In the study by Moon, Calabrese, and Arid (2008), use of the prone position was more likely to occur if the child-care provider was identified as Black or if the majority of the infants being cared for where Black. Whereas, the use of the supine position was almost exclusively used if the provider was identified as White, knew of the guidelines by the AAP, and if the majority of the infants being cared for where White (Moon, Calabrese, & Arid, 2008). Child-care workers were also more likely to use the supine position if the facility had a clear supine sleeping position requirement for all infants (Moon, Calabrese, Arid, 2008). In this same study, even after education on the AAP recommendations, child-care providers where more likely to doubt the benefits of supine sleep positioning if they were Black, or if they had less education (Moon, Calabrese, & Arid, 2008). These issues highlight the need for consistent child-care regulations and safe sleep practices across all 50 states.

A comprehensive study examining child-care regulations in all 50 states was completed in 2006 by Moon, Kotch, & Aird. Their review of 101 state regulations for child-care facilities found that only 49 required infants to be placed in a non-prone position, 18 mandated sudden infant death training for child care providers, 81 had crib safety standards, and 43 restricted soft bedding (Moon, Kotch, & Arid, 2006). The study showed that the initial Back to Sleep campaign was successful in promoting safe sleep policies for child-care workers and also highlighted the need for further awareness (Moon, Kotch, & Arid, 2006). The National Association of Child Care Resource and Referral Agency (NACCRRA) released a 2011 report that scored states according to 11 child-care program benchmarks; only a few states are still lacking in mandated sleep policies (Matthews & Moore, 2013). Arkansas was one such state and in 2008, child-care regulations in the state of Arkansas did not mandate that the supine sleeping position was to be used in child-care facilities (Matthews & Moore, 2013). A 4-year intervention was developed to raise awareness and to change state policy in 2011 from infants "should be" to "shall be" placed on their backs for sleep (Matthews & Moore, 2013).

Current Florida child-care regulations do require child care facilities to place all infants into a supine sleeping position in cribs that meet the current AAP's guidelines for crib safety (Florida Administrative Code & Florida Administrative Register, 2013). However, there are no current state regulations specifying what constitutes a safe sleeping environment in terms of bedding, blankets, or stuffed animals. Florida child-care regulations do mandate that if an infant is to be placed into a prone sleeping position a note from the infant's physician is required; however, not all Florida counties license family child-care homes, which represent a large segment of non-familial care (Florida Administrative Code & Florida Administrative Register, 2013). Family day-care homes can be registered not licensed and therefore, they are not subject to onsite inspections that center-based facilities and licensed family child/day-care homes are. Currently, the Department for Children and Families (DCF) child care licensing personnel conduct inspection and licensure of child care facilities and homes in 62 out of 67 Florida counties, as well as registration of family day care homes. Five counties have elected to regulate licensing of child care facilities and homes as provided in §402.306, Florida Statutes: Broward, Hillsborough, Palm Beach, Pinellas, and Sarasota. The child-care training introductory course for the state of Florida contains an 8-hour training course on health, safety, and nutrition where safe sleeping practices and SIDS are discussed. Additionally, there is a 1-hour training course Safe Sleep Practices for Child Care (SAFE) that is being offered by DCF as of July 1, 2016. Operators and personnel of a licensed child-care facility or child-care home must initially undergo 30- 40 hours of training and pass a competency exam; thereafter, an additional ten hours of training must occur annually (Florida Administrative Code & Florida Administrative Register, 2013). Approximately 7,096 Florida infants and toddlers were enrolled in the

federally funded Early Head Start program in 2015 (US DHHS, 2015). The Head Start/Early Head Start program adheres to a list of Performance Standards that exceed most state regulations and require that "…all sleeping arrangements for infants must use firm mattresses and avoid soft bedding materials such as comforters, pillows, fluffy blankets or stuffed toys" (US DHHS, 2015)Additional guidelines regarding safe sleeping practices not addressed in current Florida child-care regulations are removing a sleeping infant from a car seat (or any other place considered unsafe to sleep) to a crib, and ensuring a caregiver is directly observing a sleeping infant by sight and sound at all times and is directly in the room with a sleeping infant (American Academy of Pediatrics [AAP], 2011).

United States Policies on Safe Sleep Education

Many states have laws related to SIDS/SUID. The laws vary significantly, both in scope and subject. Most commonly, 37 states including Florida have laws that provide guidance for coroners or medical examiners and set protocol for autopsies of SIDS and/or SUID cases. In Florida, medical examiners are required to complete an autopsy within 24 hours (if SIDS is suspected) for any infant death. Additionally, Florida legislation deems the Medical Examiners Commission responsible for creating and implementing a protocol for all medical examiners in Florida to follow if SUID is suspected (2016 Florida Statute, Title XXIX, Chapter 383.3362). This protocol may include requirements for investigating scene of death, specific data that need to be collected, detailed criteria based on the autopsy findings to determine cause of death, and detailed criteria for tissue sampling.

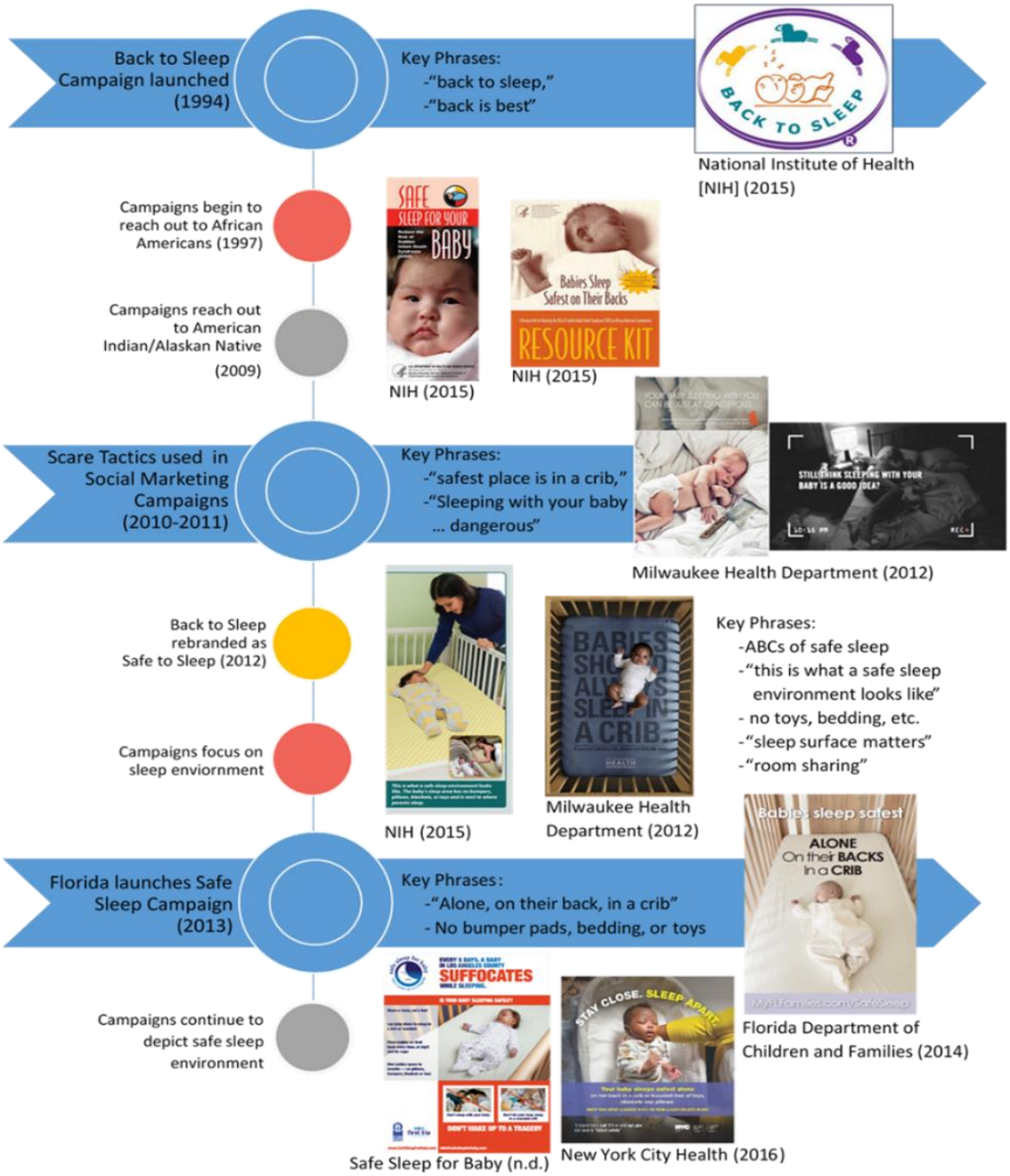
Eight states (AZ, AR, FL, KY, MN, NV, OR, TN) require data collection or research on SIDS/SUID. Twelve states, not including Florida, require an expert on SIDS participate in child fatality review committees (AL, CO, IA, LA, MD, MA, MN, MS, NY, TX, VA, WV). There are 11 Fetal Infant Mortality Review (FIMR) panels statewide organized under Florida Statute Title XLV, Chapter 766.101 and funded by the State of Florida that play an important role in identifying the circumstances and broader contexts in which child deaths occur (National CFRP 2015b). Additionally, Florida statute 383.2162, the Black Infant Health Practice Initiative, also supports FIMR teams in select counties in the state. These committees are administered through the Florida Department of Health, federal and state Healthy Start Coalitions, and public universities and colleges with expertise in public health to identify factors contributing to higher infant mortality rates among subgroups. Moreover, there are SIDS/SUID advisory councils in 19 states (AL, AZ, CA, FL, IL, MA, MI, MN, NE, NJ, NY, NC, ND, PN, TN, TX, WA, WV, WI). Additionally, 12 states (AZ, CA, FL, IL, IN, MN, NE, TN, TX, WA, WV, WI) require special training about SUID/SIDS for child-care personnel, firefighters, emergency medical technicians, and law enforcement officials. Seven states have no legislation regarding SIDS/SUID (CT, DE, ID, NM, RI, VT, WY) (National Conference of State Legislatures, 2016).

Safe Sleep Awareness Campaigns

The majority of social marketing campaigns in recent years have focused on educational messaging to prevent risk behaviors for unsafe sleep. These campaigns primarily focus on the best sleep practices for infants, depicting what a safe sleep environment versus what an unsafe sleep environment looks like. Many of the campaigns have strived for cultural competency by creating versions of their materials tailored to different target populations. The scare tactic campaigns seen between 2010 and 2011, such as images depicting children in bed with knives and other sharp objects, have been phased out due to the negative response they received from the general public.

Agencies that previously distributed these types of messages have shifted to more positive educational messages with visual or checklist examples of what a safe sleep environment looks like. Other creative social marketing messages have used beds and couches as their canvas for their messaging to shed light on how dangerous these environments are for infants. Over the years, campaigns have evolved with a greater focus on ensuring cultural competence. Many social marketing safe sleep campaigns offer materials in both Spanish and English and have also developed different versions of their printed materials that include images the priority populations are able to relate to and connect with.

Evolution of Safe Sleep Campaigns



Safe Sleep Interventions in Florida

Methods

The literature review performed by the Safe Sleep Evaluation Team at the University of South Florida examined SUID rates and risk factors, international interventions, hospital-based interventions, child-care training, parent education, and social marketing campaigns with a subsequent scan of relevant policies. The team also examined published evaluation methods and measures in 45 studies used to evaluate safe sleep interventions (Appendix A).

Next, a comprehensive inventory of almost 20 different types of intervention programs implemented in Florida's 67 counties by Healthy Start Coalitions, home visiting programs, prenatal care providers, hospitals, and other settings and services was compiled (Appendix B). This inventory was reviewed at two statewide meetings; the Healthy Start Coalitions Annual Meeting and the Florida Public Health Association Annual Meeting, where a number of health department, Fetal Infant Mortality Review team members, and other public health professionals were in attendance. Corrections were made, then the inventory was reviewed by community agencies via email and on-site at focus groups.

Another strategy used to assess safe sleep interventions in Florida was to talk with experts, stakeholders, and programs implementing safe sleep programs throughout the state. A Safe Sleep Evaluation Advisory Committee was convened via conference call to review the components of the study, determine what data or components that might be needed, and to discuss current programs inside and outside the state of Florida. Additionally, two interviews and ten focus groups were conducted in seven communities to hold more in-depth conversations about interventions being implemented in those communities (what works, what doesn't work) and the specific populations of focus for safe sleep education. Programs also discussed organizational, community, and policy challenges and successes in implementing safe sleep programs.

Results

The inventory (Appendix B) illustrates that a lot of work is being done in Florida and communities are working together to reduce preventable infant deaths. This community work was described by 86 focus group, interview, and community roundtable participants from June through September, 2016 (shown in Table Below) and with countless others attending the statewide Healthy Start and Public Halth meetings.

Qualitative Research Groups	Activity	Participants
Expert Advisory Group	Telephone Meeting	6
Statewide Healthy Start Coalition Meeting	Poster Session	n/a
Florida Public Health Association	Poster Session	n/a
Baby box interviews (Palm Beach, FAMU)	Interviews	2
Florida MIECHV Programs (Escambia, Hillsborough, Manatee)	Focus Groups	38
Community Coalitions (Escambia, Hillsborough, Sarasota, Manatee)	Focus groups	10
Healthy Babies Community Roundtable Workgroup (Hernando)	Community Roundtable	26

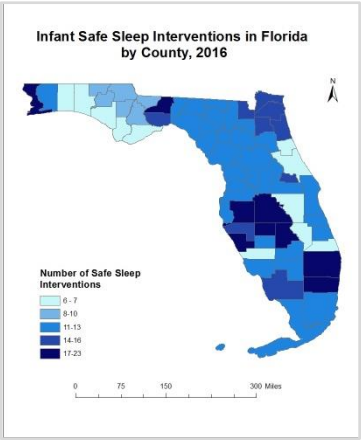


Figure 7. Ongoing Safe Sleep Interventions in Florida

Florida counties are implementing a variety of education programs: through individual, face-to-face counseling, demonstrations, and distribution of informational materials (e.g. brochures, pamphlets, door hangers, board books, onesies, sleep sacks, and sheets with safe sleep messaging). This information is provided by home visitors, health care professionals, community health workers and others at birth in the hospitals and during prenatal breastfeeding, and parenting groups. Information is also distributed via various channels (radio, television, print, and social media) through public awareness campaigns, presentations from spokespersons (including parents who have experienced an infant's sleep related death), and as part of community events. In addition to providing education and distributing materials, programs offer safe sleep furnishings (pack-n-plays [portable cribs], Moses baskets [portable bassinet, basket, or laundry basket], bassinets, and cribs) to families who need them. Several interventions in Florida were modeled after the Finnish baby boxes. For example, these boxes are being distributed by some home visiting programs and a hospital-based project in north Brevard County, and in trailer parks in Palm Beach County through a local church. These Florida interventions distributed boxes from The Baby Box Co, a California company which ships Finnish-modeled baby boxes to 20 U.S. states and 52 countries worldwide (http://www.babyboxco.com/pages/about-us). Additional baby box distribution projects are planned in other Florida counties. Programs often provide materials based on what has been funded, donated, or anecdotally appear to be well-received by families.

These programs are continuously seeking and developing culturally and linguistically appropriate community outreach, education, and materials. Partnerships continue to develop between Healthy Start Coalitions, local health departments, home visiting and other family support programs; first responders and DCF staff; Federally Qualified Health Centers, hospitals, pediatricians, and prenatal care providers; numerous community coalitions; and other agency partners (such as The [AAP] Florida Chapter, Florida Injury Free Coalitions, WIC, The March of Dimes, community foundations, breastfeeding promotion programs, etc.). As noted below, some counties have multiple types of interventions being implemented through these channels, while other counties are implementing a single program countywide. There may be benefits to either approach, depending on the constellation of agencies in the community and the needs of its residents. It may be helpful for counties to review the maps below and the inventory in the Appendix as a starting point for community planning to develop a strategic and coordinated safe sleep promotion plan.

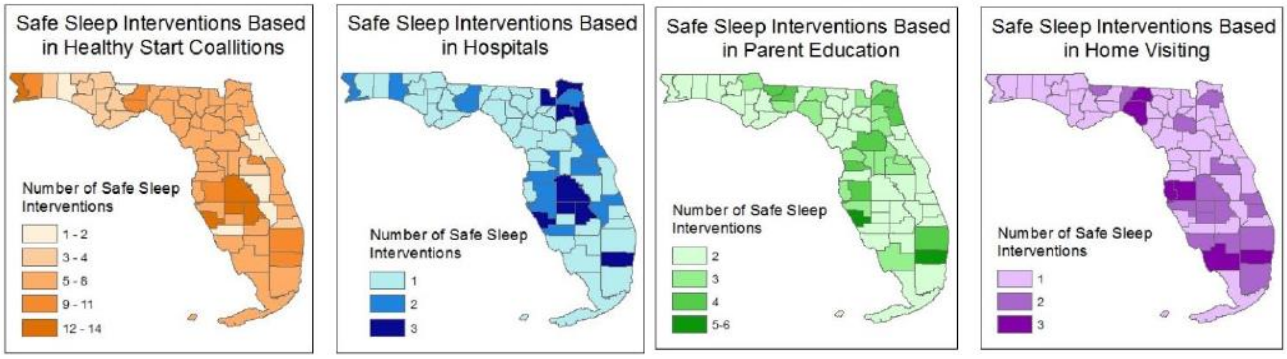


Figure 8. Types and Number of Safe Sleep Interventions being Implemented in Florida

The results of this study identified several important issues regarding sleep-related infant deaths. These include the significance of the Child Death Review and Fetal Infant Mortality Review committees in determining such issues (National CFRP, 2015a, 2015b); media portrayal and awareness; hospital education and adherence to safe sleep guidelines; promising practices; and target populations for interventions. Local health departments, healthy start coalitions and state advisory groups can continue to monitor rates, trends,

and risk factors of SUIDs. FIMR is a surveillance program in Florida that performs the essential task of reviewing abstracts of medical charts of infant and fetal deaths. Issues associated with fetal and infant deaths are discussed and strategies to overcome these issues are developed. FIMR is vital to determining common concerns occurring with infant and fetal deaths (National CFRP, 2015b). Members of FIMR examine the circumstances and factors associated with sleep-related deaths, as well as the extent to which victims' families were involved with various systems of care.

"I really think we've got to get the messages beyond just the mom because even the dads - at one review, we had out of four cases, there were two of them were dads who were sleeping on the sofa so putting the baby in a safe sleep environment at 2:00 AM, they may have gone to bed at 10:00 in a safe sleeping environment but at 2:00 AM when the baby is crying and everybody is exhausted, and they are just doing whatever they can to have that baby go to sleep. They're on those huge sofas and all of that and that's where we're finding some problems." – Community Coalition Focus Group

Findings related to regular reviews of the available data can be communicated to state and local programs to improve prevention efforts. FIMR members discussed the increase in sleep-related infant deaths over the last few years and the need to develop other strategies to address this problem, particularly with high-risk populations:

"I was at the FIMR meeting last Wednesday… he ended the meeting with, 'I don't know about you guys but I'm overwhelmed. I'm just going to go back to my office where I think I can at least make some sort of a difference, because this is overwhelming to me. I just I feel like a hamster in a cage, because I feel like I'm just spinning my wheels here.' We see the same issues over and over with substance abuse and this one particular we've deliberated… it's sort of the same overarching issues; heavy substance use and multiple pregnancies, and none of them- they don't have custody of the other kids but they're continuing to have more and more babies." – Community Coalition Focus Group

To assist with improving prevention efforts, raising awareness is vital to reducing infant deaths. Communicating through various channels, including media outlets is an important component. Nearly all counties are members of the Cribs for Kids network (http://www.cribsforkids.org/), which partners with providers who offer safe sleep education using brochures, posters, DVDs, and door hangers; provides cribs to safe sleep intervention providers (for a fee); and encourages hospitals and health systems to become certified by the National Safe Sleep Hospital Certification program. Florida has a dedicated Cribs for Kids representative (Jacksonville) to recruit hospitals statewide to become Safe Sleep certified and to support consistent safe infant sleep messaging. Currently there is one hospital that is Cribs for Kids Safe Sleep certified (Pembroke Pikes) and four others that are in the process of becoming certified.

Several strategies were described by focus group participants (See inset "What Works"). One area of need is consistent adherence to safe sleep guidelines in hospitals, and standard universal training to help parents transition from the hospital sleep environment (e.g. swaddling, positioning), particularly in the NICU, to home:

"And how do we expect this child, this family to go home and sleep that baby appropriately if we're not even doing it the right way in the hospital? … we can do all kinds of campaigns, and billboards, and initiatives, but if we can't get our act together as a medical community and start modeling that behavior and start walking the walk, we're not going to get anywhere." – Community Coalition Focus Group

Hospitals should demonstrate safe sleep practices, transition infants to safe sleep positioning before discharge, and perform standardized discharge teaching. As one focus group participant challenged:

"What is standardized discharge teaching?" Well what we discovered was it's not, it's not standard, it's not standard from each hospital. So one of the things is, "Okay, well let's look at that. What are the points that we're really going to make sure each family gets? And what is it going to look like? Is it culturally sensitive? Is it written at a level that every parent can understand?" – Community Coalition Focus Group

Advice from medical professionals is highly regarded by parents. Therefore, modeling correct behavior in the hospital is fundamental for parents to see. Hospitals need updated policies regarding infant sleep and to provide education and training for staff to ensure all infants are being placed properly to sleep. Hospital-based interventions are crucial for providing safe sleep education at a vulnerable time for parents. With policy changes being incorporated to improve awareness and education for not only parents but also staff in hospitals, improvements in sleep-related infant deaths should occur.

One promising practice that is currently being implemented in 11 Florida counties is the Safe Baby program (www.healthysafebaby.org); a comprehensive curriculum that takes place in multiple settings to educate professionals, parents, and community members about safe sleep environments, choosing a safe caregiver, and preventing shaken baby syndrome. The Safe Baby curriculum was developed at the Healthy Start Coalition of Hillsborough County and to date has been used to train an estimated 14,000 professionals. In addition, Safe Baby is used to educate all parents that give birth at the four birthing hospitals in Hillsborough County prior to their discharge home. With an annual county birth rate of over 16,000, the Safe Baby program is far reaching in the Hillsborough County community. Meantime, other MCH agencies and Healthy Start Coalitions use Safe Baby as a comprehensive educational program implemented in obstetric and pediatric offices, child care centers, Head Start, USF department of medicine, Nursing programs, Federally Qualified Health Centers, child protection teams and other parenting education and support programs.

Figure 9. Florida Counties with Safe Sleep Baby Programs

Hospital-based programs often provide education to families along with safe sleep promotion materials and kits. These kits vary by community and by hospital for those not implementing the Safe Baby program. Some hospitals have, or are considering offering newborn safe baby kits packaged in baby boxes, although the baby box approach appears to be highly controversial among Florida providers (see insert below). One interesting program included in hospital or prenatal safe sleep kits for at least eight Florida counties is Charlie's Kids Foundation (http://www.charlieskids.org/), which provides educational materials and board books (Sleep Baby, Safe and Snug) that reinforce safe sleep messages at bedtime. Tennessee partnered with Charlie's Kids Foundation and all of their hospitals distribute these board books and provide education to all new parents. Tennessee Department of Health reports a 25% reduction in sleep-related infant deaths in Tennessee since the partnership began in 2014 (https://www.tn.gov/health/news/37842).

Florida's Healthy Start Coalitions (http://healthystartflorida.com/) work with hospitals, health care providers, home visiting programs, and other community agencies, and participate or lead local SUID committees. The coalitions report using different combinations of safe sleep materials, curricula and approaches, though most utilize National Institute of Child Health and Human Development (NICHD), Bright Futures and Sleep Right, Sleep Tight materials. The majority of coalitions also use Back to Sleep, Childbirth

Graphics, Florida Department of Health and Department of Children and Families materials (see Appendix A). The Florida State Partners for a Healthy Baby Curriculum (http://www.cpeip.fsu.edu/PHB/) is a resource utilized statewide but home visiting and other prenatal support programs. Healthy Families Florida is available in all counties, and the Maternal, Infant, and Early Childhood Home Visiting Initiative (http://flmiechv.com/) has expanded home visiting into 22 communities. Still, home visiting– a powerful strategy for delivering prenatal and parenting education and support - is still not available in every county to every family who could benefit.

Baby Boxes in Florida

Main findings

- When they are not distributed universally, parents may find them stigmatizing or offensive; others are delighted to receive them.
- Baby boxes are controversial in Florida; some have embraced them and others are staunchly against them.
- The extent to which they are actually used by parents remains to be determined.

Benefits cited by programs include:

- Baby boxes are useful with certain Florida populations, such as those living in mobile homes or other settings with limited space, crowded housing situations.
- Can be distributed as a tangible, easy to distribute safe sleep promotion package that includes materials and the crib alternative.
- Baby boxes can provide an easy, portable space for safe sleeping
- Some have found them to be more economical than cribs or pack-n-plays.

Challenges identified include:

- Unclear results on efficacy and safety of boxes
- Water soluble, difficult to clean.
- Not always used as intended.
- Insufficient alone at preventing SIDS if not paired with awareness and education.
- Concerns raised that the baby outgrows the box, the parent will not have a safe place for the baby to sleep.
- Concern about placement of box where it can be tripped over, covered, or pets or pets can get inside.
- The box comes with a lid as well as many warning messages– concerning for some providers.
- Some found that the box kit costs nearly the same as a pack-n-play; can be expensive to purchase and ship.

They're comparing something that happened in Finland with the population that is not the population that we're dealing with first of all. With the healthcare system that is so unbelievably not like ours at all, right? Where women are supported, they have maternity leave for months, and if you look at the statistics it's, their infant mortality rate reduced not necessarily - they cannot, they absolutely cannot say it was attributed to the fact that they doled out cardboard boxes and stuck their infants in them. I mean, there were so many other factors that went into that." – Community Coalition Focus Group

"If you provide a crib, then you don't know that it got installed correctly. It could be missing things or it just - they're expensive, lots of pieces that can be mis-installed. The pack-n-plays, they come completely assembled. They unfold. They're small and portable.R2: Some agencies have said, '… let's try the baby boxes instead.' R1: …It's not going to necessarily hurt. R2: We actually presented it with the Child Protection Team at the Child Death Review and it was my understanding is half the room loved it or they're excited and the other half were disgusted." – MIECHV Administrator/Supervisor Group

When you have something that has so many warning signs, like make sure you don't get it wet, make sure that you put it on a stable surface… that if you do put it on the floor, that animals can't get into it… that you never put the lid on the box with the baby in it… that you're not walking in an area with the box, with the baby in it where you could trip and fall." – Community Coalition Focus Group

Through this evaluation, several populations of focus for tailored and targeted safe sleep interventions were noted including racial and ethnic minorities; fathers, relative caregivers, and babysitters; intergenerational households; parents involved in substance abuse; and families with crowded, small, or unstable housing.

Breastfeeding advocates are crucial to have on board to promote safe sleep interventions. Advocates can promote breastfeeding and attachment as they support safe sleep practices. SUIDs prevention programs need to coordinate guidance and messaging with breastfeeding and co-sleeping advocates. Some programs have found that positive "room sharing versus bed sharing" messages are appealing to these agencies and the population they serve.

"We offered support. We offered alternatives like pack-n-plays or the sleep boxes. We modeled. We provided this information. We showed this video. We get a lot of resistance. There is a whole group of people that just, they say co-sleeping is the best. They're like, 'Other countries do it,' and they go into all that. They have their research and their facts, though I don't agree with them but - there are doctors in the community, too. There are agencies that are all about co-sleeping. It's very controversial in this area." – MIECHV Administrator/Supervisor Group

First responders are in a position to educate families with infants while responding to emergency and non-emergency situations in their communities. First responders can engage families and provide face to face education while also reinforcing safe sleep messages. In conjunction with the Healthy Mothers Healthy Babies Coalition of Broward County (which provides safe sleep education throughout the community, trains organizations, and provides cribs to those in need), the Direct On Scene Education (D.O.S.E.) Program began in Ft. Lauderdale, Florida in 2012 after noticing a rise in sleep-related infant deaths. The D.O.S.E. Program is an educational program based on safe sleep education that first responders deliver during routine situations when a pregnant woman or an infant is in the home. The responders have a safe sleep kit they can provide to the family and cribs in some cases if they are not affordable.

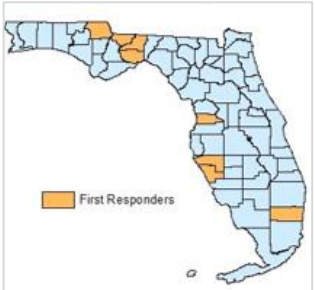


Figure 10. Florida Counties with First Responder Programs

While it is critical to educate mothers about safe sleep environments, other caregivers cannot be forgotten. Fathers, grandparents, family members, and babysitters should all be targeted with information about sleep safety for infants. Some educational materials, such as those developed by NICHD (https://www.nichd.nih.gov/sts/materials/Pages/default.aspx).are tailored to fathers and grandparents, from different racial and ethnic backgrounds Hospitals should include fathers in all parenting education and stress the importance of informing all caregivers of proper sleep environments as well as sleep position for infants.

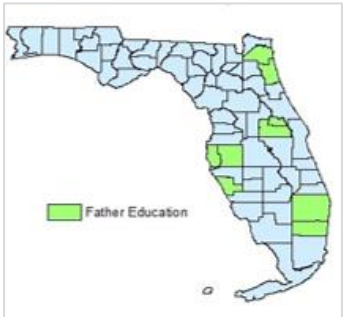


Figure 11. Florida Counties with Father Education Programs

With more infants being placed into some form of non-parental child care the need for consistent and clear guidelines are needed for child care providers. Not all states require that death certificates document that a child died while in non-parental care, therefore deaths of infants occurring in child care facilities could be under reported (AAP, 2011). Training and established procedures within the facilities should also be maintained for current and new employees. Child care workers are liable for the care that they provide to infants, therefore child care centers should work to ensure they are providing the safest sleeping environment possible to the children they care for (AAP, 2011). Socioeconomic and ethnic disparities are seen in some child care facilities along with the education level of the workers in the facility. Consistent training and awareness

as to AAP's guidelines for safe sleep positioning and environment would help reduce risk of SUID in child care homes and centers, as well as provide another venue for educating families.

Community Feedback – Flip Charts

Focus Populations

- Differing cultures more likely to co-sleep - African American/ Black and Hispanic/Latino communities
- Fathers, siblings, grandparents, and other caregivers
- Bed-sharing among siblings, twins
- Intergenerational mixed messages and resistance
- Overcrowded Housing (e.g. some immigrant populations) trailer parks- Lack of space for cribs
- Parents of children with special health care needs, disabilities
- Women with higher education (co-sleeping advocates, attachment parenting movement), birthing centers
- Child Protection Team population – child welfare, and chemically dependent mothers
- Breastfeeding mothers who need practical tips on managing night feeds and safe sleep environment
- Health care providers and other agencies who circulate mixed or controversial messages

"I have this client – she's Spanish... our culture, we do co-sleep with babies. Well, not anymore because of the whole safe to sleep, so I'm trying to put that out there like really bad, but that's something that we do… This mom, she's recently new to United States so all the culture from the United States is new to her too. I'm teaching safe to sleep, she's like, 'Really?' … she put in practice everything I say. The dad -he's a truck driver -he will come back to a month, or like two weeks or three weeks. He saw him when he was a newborn then he came back when he was like two and a half [months], and he's like, 'Well, why he's sleeping on the crib? It's time for him to sleep with us. I want to feel him,' and the mom was like, 'No. It's not happening because this, this, and that.' She teaches him all of those things because he's never there. She's schooled her husband to how proper sleeping. Those are the little stories that we get to hear." – MIECHV Home Visitor Group

"…and some of these girls' lifestyles too, they're partying half the night, and they're either high or drunk, or tired, or a combination. That baby is going to cry in the bed but the baby is going to shut up when they're in the bed with mom. So I think that's a factor too… Or they're transient, they do not sleep at home... They don't have a place… we see that, that's not uncommon." – Community Coalition Focus Group

"It comes from older folks in their households. I don't think it's their knowledge, because everything that they're reading at the OB clinic, at the [pediatric] clinic is 'back to sleep, back to sleep, back to sleep'. They're going to get it in the hospital when they deliver… with us through home visitation…through WIC. They get it through lots of agencies about back to sleep but it's the older family members in the household who when they were having their children put them on their bellies, they get the resistance from them." – MIECHV Administrator/Supervisor Group

"…the housing where people - when they're living in a hotel. There wasn't a lot of room for a pack-n-play. Multiple children in one bed where the mother, a grandparent, so there's grandparent - two beds, grandparent in one and kids and ma. There wasn't a lot of room, so the mom just refused. - MIECHV Administrator/Supervisor Group

"… a mom who co-slept and lost her baby. She's an African American mom and young-ish. She was probably in her early 20s. This mom was willing to speak about her experience. So she partnered with us to do – we did a professional development session. I think we did a panel, the METV taped for us, but having her as kind of a face and willing to speak to this experience and her journey is very powerful, very powerful.. She acknowledges it. She had had the education. She knew but she had moved into a new apartment and it was late at night and just did not have the energy to put the crib up or whatever, and so fell asleep with the baby in the bed with her. So yes, that's really heartbreaking." – Community Coalition Focus Group

Community Feedback – Flip Charts

What Works?

- ✓ Collaboration among various coalitions and programs
- ✓ Marketing messages- buses, hospitals, baby stores, media (TV, radio), social media, community events
- ✓ Pictures and handouts showing baby's anatomy and the safe and unsafe sleep occur
- ✓ Consistent, repeated messaging e.g. ABC: Alone, on Back, in Crib
- ✓ Demonstrations, not just reading materials
- ✓ Parent spokesperson/Peer to peer education
- ✓ Pediatricians/Obstetricians reinforcing message
- ✓ Prenatal education
- ✓ Presentations at WIC breastfeeding classes
- ✓ Reinforcement from hospitals
- ✓ Safe sleep DVD/PSA (~6 min.)
- ✓ Safety checks in the home at age 4-6 months
- ✓ Sleep sacks and sleepers " this side up"
- ✓ Childcare centers - remove unsafe sleep items, replace with sleep sacks
- ✓ Clients sign a contract that they will practice safe sleep and will be responsible for any adverse effects that result from practicing unsafe sleep
- ✓ Documenting is very important, i.e.What did you try?
- ✓ Culture specific education + resources, e.g. classes in Spanish, "Save my life" program tailored to Black/African American Community
- ✓ Mothers educating fathers about safe sleep.
- ✓ If we see resistance, continue to review information
- ✓ Room- sharing over bed- sharing message
- ✓ Promoting short and long-term benefits to parents and child, e.g. explaining that the baby will sleep better in his/her own environment, with fewer disruptions than if co-sleeping
- ✓ Baby boxes or portable cribs (pack-n-play) for alternative settings such as other caregiver's homes and different sleeping areas in the home
- ✓ Moses Baskets (laundry baskets retrofitted into makeshift cribs)
- ✓ Educating family and siblings, e.g. "Safe sleep for my grand baby" materials
- ✓ Provocative approach with face to face education and examples, sharing news articles and personal stories
- ✓ Finding a balance between applauding clients efforts and discouraging them in unsafe sleep situations

"I start out with that especially when I'm first meeting my clients. I let them know like, 'As a new mom and you're unsure of some things, you're going to go and ask you mom. You're going to go and ask your family members, your friends that just had a baby, or your aunt that just had a baby three years ago, but it's not that weird not wanting to know about your cultural ways of doing things and you respect that, but what I want you to understand is that we're going to give you information of what's the safest way to do things according to research, because it's an evidence-based practice.' This is what we see has worked and this is what would put you at risk for things." - MIECHV Home Visitor Group

"R1: We can use different things. We have pamphlets, safety topic and also research and stuff, DVDs, I used the DVD yesterday, I like doing that a lot. Then you have conservation about it after. Moderator: Okay. So, pamphlets, DVDs, you talk about it. Respondent: You can do demos. R1: Yes, demonstration like put your shirt over your mouth and show how – R2:: We demonstrated – yes, I've done that. Respondent: If you put your shirt – they do it as our training – so if you put your shirt over your mouth and you show your oxygen is blocked off and how much it would be for babies who slept like that all night. R3: Carbon monoxide, too, I think is what they said because you're breathing in, exactly what you're breathing out."- MIECHV Home Visitor Group

What Does Not Work?

- ✓ Single approach – e.g. only providing free cribs/ pack-n-plays, only using brochures
- ✓ Images of unsafe sleep environments
- ✓ Scare tactics
- ✓ Misinformation or controversial information – e.g. family culture, beliefs, wives' tales.
- ✓ Inconsistent messaging - e.g. breastfeeding vs. safe sleep
- ✓ Marketed baby supplies – e.g. bumper pads
- ✓ "Moses baskets"- Not always used as intended (used for laundry)
- ✓ Old cribs (+10 years old)
- ✓ Need to address: sleeping on parents, sleeping on sofa, cultural practices - mattress co-sleeping
- ✓ Baby box -Lid on baby box, water soluble baby boxes

Conclusion

Many Florida communities have made great strides in developing strong safe sleep coalitions that include partnerships with service sectors cited in the literature. Communities are implementing a wide range of intervention approaches through health care providers, home visiting programs, child welfare and law enforcement agencies, and parenting support programs. Greater unity and streamlining of these efforts would strengthen their impact; agencies should conduct strategic planning to agree upon a well-designed cohesive approach in their communities; with consistent materials and messages provided by all sectors.

More rigorous evaluation of these interventions is needed. Well-designed studies that test the efficacy and effectiveness of various intervention approaches will help programs make wise decisions with limited funds. At this time, many programs are basing their intervention approaches on what items are donated and what funding is available, rather than research evidence, because research is lacking in this area.

We need to move beyond only ensuring that there are safe sleep furnishings, and beyond one-time education. What providers tell us is that the message needs to be clear, consistent, and repeated over time and across settings and caregivers. The local health departments, healthy start coalitions, and FIMR teams continuously review infant mortality data and have identified populations at risk and areas for action. The FIMR teams have noted that many deaths occur in homes that have a crib or bassinet available. Thus, interventions also must be designed with the understanding that infants sleep in shorter, more frequent cycles than older children and adults, and their sleep schedules are often unpredictable. Infants also sleep or nap throughout the 24 hour cycle in a variety of settings, with a variety of different caregivers. Most caregivers face challenges in getting babies to sleep and are reluctant to wake a sleeping baby, further increasing the likelihood that the baby will fall asleep in a setting outside of the designated nursery crib. In fact, the AAP's most recent guidelines emphasize promoting room-sharing (Feldman-Winter, Mendez, & Jarris, 201). Parents may know what to do, have the correct environment in place and the best of intentions, but may not always follow those recommendations:

"I also think maternal exhaustion [is a factor]. If she's been working all day and the baby is crying and she also has that little guilt that she's been away from the baby all day, and she wants the closeness of the baby plus it calms the baby down that a lot of it has to do with – I hate these, the terms that sounds so clinical but poor sleep hygiene, not helping your children, doing what needs to be done to have them sleep through the night. The baby's up all night and you've not slept for six weeks… you'll do anything, anything to get that kid to sleep because you've got to sleep and work all day, take care of three kids…" – Community Coalition Focus Group

Additional research is needed to better understand parent and other caregivers' knowledge, attitudes, beliefs, and behaviors related to safe sleep. Furthermore, the knowledge, beliefs, and promotion messages disseminated by health care and other social service providers should be examined. Assessing hospital safe sleep promotion and transition practices, and the extent to which infant childcare programs are consistently following and promoting safe sleep guidelines are additional areas for further research. Epidemiologic studies would also be helpful in parsing out the relative contributions of various risk and protective factors; For example, some studies (e.g. Moon, 2011) show that Hispanics have lower rates of SUID, yet providers have noted that some Hispanic groups have higher rates of co-sleeping.

Important areas for policy implementation and assurance improvements are media messaging and infant supplies that are contrary to current safe sleep recommendations. Magazine and online articles and images condoning unsafe sleep environments are rampant and these mixed signals continue to persist in baby supply stores and online retail outlets. Policies that address the safety of retail items could help reduce the barrage of mixed messages that face parents at home and in stores.

Better implementation, coordination, and alignment of evidence-based culturally appropriate safe sleep interventions are needed in Florida to reduce sleep-related infant deaths. Organizations and systems of care

need to work together to ensure clear, consistent messaging that reaches all segments of the community. Collaborating with programs outside of Florida, such as Virginia 's Our Babies: Safe and Sound along with an awareness-raising campaign implemented by the First Lady of Virginia, Joanne Jaeger Tomblin combines many of the recommendations listed in this report. Other programs such as Preparing for a Lifetime in Oklahoma; Sleep Baby Safe and Snug in Tennessee and Georgia, and B'more for Healthy Babies in Baltimore, Maryland could contribute to further program planning.

What's Next? Suggestions for Improving Safe Sleep Interventions to Reduce SUIDS in Florida

1. Rates, trends, and risk factors for sleep-related SUID should be monitored regularly. FIMR and CDR committees should be adequately funded in every community.
2. Community Coalitions and Healthy Start Coalitions should develop comprehensive, streamlined, and consistent safe sleep interventions and messaging to be implemented through various channels.
3. Healthy Start Coalitions with high rates need more attention and collaboration with coalitions with low rates may be needed to examine the differences in populations and programs to lower their SUID rates.
4. Safe sleep interventions need to be *universally* implemented, with specifically tailored outreach materials distributed to parents and caregivers in priority populations, and to the health care and other providers they interact with, and retail outlets that they frequent.
5. More research is needed on the effectiveness of interventions in Florida, including comparative effectiveness of various sleep furnishings (cribs, bassinettes, pack-n-plays, baby boxes), outreach materials and message delivery, and on cultural attitudes, beliefs, and practices of parents, other caregivers, professionals.

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Appendix A: Literature Reviews

International Articles

Study	Country	Objectives	Study Design	Study Population	Sample Size	Intervention	Evaluation Methods	Analysis	Key Findings	Limitations	Conclusion
Ateah CA, 2011	Canada	To describe the usage and impact of a simple online education tool for aligning people from across sectors with knowledge, attitudes and actions for providing developmentally appropriate sleeping conditions for babies.	Single group intervention followed by an infant safety questionnaire developed by the researcher regarding the education intervention and prenatal parent education	Convenience sampling. The intervention was carried out during the last class of a series of six prenatal classes offered through public health and by public health nurses in a Midwestern Canadian city. A total of 31 first-time expectant parents agreed to participate, which consisted of all registrants of the two sections of prenatal class offerings.	31	One -hour education session through powerpoint presentation that covered safe sleep environment, shaken baby syndrome, risks of physical punishment and positive parenting, and infant development and safety concerns given on page 94 of the manuscript	Questionnaire administration.	Univariate statistics	Overall, most participants in this study found the content useful, planned to use it in caring for their infant, and indicated that this information should be shared with all expectant parents.	Bias due to self-reported measures and convenience sampling	First time expectant parents believe that the types of information on infant care that were shared with them in the 1-hour intervention should be available to all expectant parents.
Cowan S, Pease A, I New Zealand		To describe the usage and impact of a simple online education tool for aligning people from across sectors with knowledge, attitudes and actions for providing developmentally appropriate sleeping conditions for babies.	?Cross-sectional	Anyone who opened the online link, completed the content, and responded to the rating of "increased confidence"	2,683 sessions	A 24-hour presentation, developed as a tool for co-ordinating peer-facilitated SUDI prevention education delivered by Safe Sleep Champions, was fitted with voice-over and formatted by a software development company for online access. The tool addressed the following: current prevalence and variations; well-known evidence on risk and protective factors, the bed sharing controversy, coroners' perspectives,	E-learning tool called "Baby Essentials Online". The tool was promoted through a network of 'safe sleep' champions across the country and collected basic information on usage, reach and impact.	Frequency analysis and chi-square tests	On completion of the course, most rated highly (7–9/9) (68.8%) their increased confidence' to discuss infant sleep safety with others. A high increased confidence rating was significantly influenced by spending more time per slide (P < 0.05) and being Maori, Pacific, Asian or 'other' compared with NZ European (P < 0.05).	Self-selection bias.	Online education tool is effective in achieving high usage, broad participation, and increasing confidence to discuss infant sleep safety with others. e-Learning modes should be considered where there is a need to align large numbers of people in a short time with understandings and actions for addressing a specific health issue.
Galland	New Zealand	To determine the extent to which infant care practices for prevention of SUDI are being followed in a NZ community, and to develop a SUDI risk assessment instrument that could be used to identify maternal, infant and household variables predictive of SUDI risk.	RCT	Participants were families comprising the control group (n = 209) of a 4-arm randomized controlled trial (RCT): the Prevention of Overweight in Infancy (POI) study (total n = 802). Parents were recruited antenatally from the single maternity hospital servicing Dunedin city.	209	Standard care regarding infant sleep practices offered free and delivered by registered Well Child providers, during home or clinic visits typically scheduled at ages 6 weeks, and 3 and 5 months. In addition, written materials on helping protect babies against SUDI are given to parents at antenatal and postnatal visits.	At baseline (third trimester) and monthly at infant ages 3 weeks through 23 weeks, parents completed questionnaires collecting data on the variables to be used to calculate the SUDI risk score: sleep position, place of sleep, smoking, breastfeeding, and pacifier use. Questions were also asked about bedding (under and over baby). The questionnaires were administered in person at baseline, 3 and 19 weeks (full questionnaires), and by telephone at 7, 11, 15 and 23 weeks. these given the low prevalence of SUDI) were extracted from the literature for not following each "best practice". A total risk score was created by multiplying the risk ratios together if they were not following one or more of the best practices recommendations.	Linear regression; fractional polynomials for non-linear associations, log-transformation of the risk score.	There was a high prevalence of the safe practices: supine sleeping (86–89% over 3–19 weeks), mother not smoking (90–92% over 3–19 weeks), and not bed sharing at a young age (87% at 3 weeks). Five independent predictors of a high SUDI risk score were: higher parity (P = 0.028), younger age (P = 0.030), not working or caring for other children antenatally (P = 0.031), higher depression scores antenatally (P = 0.036), and lower education (P = 0.042).	The respondents were from areas of low SUDI risk and predominantly Caucasian, thus we don't know how well the score would translate to a study of high risk infants. The calculation of the total SUDI risk score assumes multiplicative and not additive risks.	Groups within the community identified as priorities for education about safe sleep practices beyond standard care are mothers who are young, have high parity, low educational levels, and have symptoms of depression antenatally. These findings emphasize the importance of addressing maternal depression as a modifiable risk factor in pregnancy.
Issler	Brazil	To evaluate the effect on mothers of an individual educational intervention in the maternity ward about infant sleep position	RCT	Convenience sample: mothers and their infants living in a previously selected area of Porto Alegre who were born from September 2005 to September 2006. The motherinfant pairs were selected at the maternity ward of the Hospital de Cl inicas in Porto Alegre, a large teaching hospital located in the c apital of Rio Grande do Sul, a city with approximately 1.4 million inhabitants.		A one-on-one education session by the maternity bed and a folder with information about infant sleep positioning.	Questionnaire administration at baseline. At 3 and 6 months a questionnaire was administered at participant's home that asked routine habits related to their infant's sleep (place and position to sleep) and other issues about the care of the infant (breastfeeding, weaning, food introduction schedule, and other health care practices). The interviewer then observed the position of the infant if he or she was sleeping. Using a baby doll, the mothers showed which position they usually put their	Student t-test or chi-square test, logistic regression	Among mothers in the intervention group, 42.9 percent put their infants to sleep in a supine position at the 3-month visit, compared with 24 percent of mothers in the control group (p = 0.009). In a multivariate analysis, the intervention at the hospital was the only variable that influenced maternal practices with respect to infant sleep positioning (OR 2.22; 95% CI 1.17–4.19).	The parents might have placed their infants in the supine position during routine care at the hospital, together with orientation received from nurses and physicians and not necessarily due to the intervention.	A simple and low cost educational intervention can promote changes in the mothers' practices about the sleep position they choose for their infants
Mileva -Seitz, 2016	Worldwide (syste	To describe the literature on bed-sharing, comm on practices (WW heatmap of prevelance) and recommendations; identify gaps in literature	Systematic review of available literature	Scientific papers on bed-sharing published between 1973 to Jan 1, 2016.	659 papers reviewed (peer-reviewed, editorials, commentaries) on parent-child bed-sharing	None	Narrative review (vs. meta-analysis which it was not), thematic overview of themes and	Heat map; qualitative analysis	Diversity of bed-sharing around the world (Western national lower than developing; Afr and Asian have higer rates); parents have a variety of cultural and socioeconomic reasons for bed sharing, reactive or intentional; published research lacks sound study designes and strong public recommendations; lack of research on normative physiological and psychological characteristics of bed-sharing and	Did not address discrepencies between works; did not do meta-analysis of quantitave data; possible selection bias; limitations in individual studies reviewed may make them less reliable	need longitudinal and experimental studies; need cross-cultural studies with larger sample size; need more research on directionality of influence b/w breastfeeding and bed-sharing, maternal depression and bed-sharing; more research needed on the role of fathers
Rivarola, 2016	Argentina	To assess the impact of an educational intervention at 60 days of life to improve adherence to recommendations on safe infant sleep	RCT	Two hospital in the District of Pilar (accounting for 95% of births in that area), survey administered in maternity center to determine eligibility; all eligible invited into study	550 newborns; 283 control, 267 intervention	At 60 days of life: Educational intervention conducted at maternity centers aimed at improving adherence to the recommendations on safe sleep, called "crib card"; training healthcare members, giving info to families, providing written material and using stickers on cribs	Personal survey (baseline data) of newborns on SIDS prevention practices, intervention, followed by a telephone survey at 60 days	Descriptive analysis of demographic and prevention outcome measures; chi-squared tests for outcome measures, Mann-Whitney test (t-test), Shapiro-Wilk test	After intervention: a 35% increase in supine sleeping position, 11% increase in exclusive breastfeeding, decrease in co-sleeping from 31% to 18%.	Attrition: 51 patients dropped out; possible bias introduced b/c difficult to have a truly control group in hospital setting (families share info through social exchance, etc)	Edu intervention was useful to improve adherence to safe sleep recommendations (back to sleep, breastfeeding, co-sleeping); but no difference in smoking, bedroom sharing or pacifier use.
Ward, 2016	International (liter	To synthesize international research on interventions related to safe sleep recommendations to reduce risk of sleep-relatedsidsaths and effectiveness in changing infant sleep practices	Systematic review of available literature	Peer-reviewed articles published between 1990 and 2015 which reported intervention and results	29 peer-reviewed articles	None	reviewed articles that met inclusion criteria (see column E), summarized with structured data extraction sheet and results summarized using narrative synthesis process	qualitative analysis (narrative, summative)	majority of studies focus on infant sleep with primary caregivers, few in health care setting, one in child care setting, most interventions target mothers (some also included partners, wider families); diversity of demographics; differences between subgroups (be wary of generalizability), timing of intervention is important	Only used four databases and peer-reviewed journals; did not apply quality assessment criteria to the review; limited time span of interventions; No meta-analysis b/c of large variation in interventions, methods, and outcomes, within study. majority of articles did report limitations including biases, small N, and lack of control	Need more studies with rigorous evaluation plans, utilize more comparison groups, collect demographic and follow-up data
Wilson, 2010	Australia	To describe risk factors for SIDS, safe sleep practices, and recommendations for Australian GPs	Called a "Professional" article; seems similar to an editorial, a review in a journal	Published articles on safe sleep practices and recommendations in Australia	29 articles referenced, but no formal inclusion/exclusion critera	None	Summary of literature	No formal	Studies identified 3 key factors in SIDS risk: sleeping position, parental smoking, and co-sleeping, ethnic disparities exist; Safe sleeping messages promoted widely in Australia; need more education for health professionals b/c sometimes guidelines not followed (this finding cited from American studies);	No rigorous data collection or evaluation methods; limited reliability	GPs and nurses have a key role to play in educating and supporting parents in safe sleeping practices, should update own edu to keep up with current recommendations; need to provide edu in native languages for mothers
Hesselink, 2012	Netherlands	To evaluate an antenatal program targeting multiple risk factors (HMHB) developed fro second generation Turkish women living in the Netherlands	Non-randomized control trial	First and second-generation Turkish women living in the Netherlands who were 3-5 months pregnant at time of study; intervention was carried out at midwife practices in Amsterdam between 2006 and 2008	119 in intervention group, 120 in control group	Used needs assessment with participants to design intervention (Healthy Mothers, Healthy Babies, HMHB) which consisted of 8 group classes of two hours each (Before delivery), and 2 home visits of 1 hour each (after delivery)	Structured questionnaires 3-5 mo of pregnancy (baseline), 2-3 mo after delivery (T2), and 5-6 mo after delivery (T3).	linear or logistic GEE analyses for longitudinal data, standard lineral or logistic regression analyses for data with only on follow up measurement (missing T1 or T2), effect modification tested, multilevel analyses: at levels of midwife practice, time, and individuals	HMHB was effective at improving knowledge about smoking, intention to engage in prevention of SIDS, and short-term SIDS prevention behavior. No effect found for smoking during pregnancy, SIDS prevention behavior long term, soothing behavior, serious depressive symptoms, and parent-child atachment	intervention and control group was not comparable (intervention group lower edu, lower SES), selection bias, tools used for measurement may not be precise enough (ie. parent-child attachment)	Though intervention is not show effects on all measures, the program appeared to be highly welcome, reach an underserved minority group who is at risk for SIDS, HMHB can be used as a basic antenatal program and a screening opportunity for women who smoke or have depression
D'Haluin, 2011	France	To evaluate formative evaluation (a pedagogic method that sensitizes mothers to SIDS) as a new way to improve prevention of SIDS	RCT	Mothers hospitalized (postpartum) in the maternity department of the Rennes university hospital between 6/19-9/25, 2005. Not high risk pregnancies included	320 women (160 in intervention and 160 in control)	oral advice about SIDS prevention from paediatrition, leaflet of recommendations containing risk factors given to BOTH groups. Intervention group was also given a educational questionnaire about SIDS risk prevention factors before receiving package described about. Control group just recieved the package (oral advice and leaflet), no educational questionnaire.	during hospital stay: first questionnaire about SES and medical background of family and 2nd Q on health care recommendations of SIDS: control group only recieved 1st questionnaire. after 3 mo. mothers called for interview about SIDS prevention knowledgeand practices	calculated two scores: mothers' SIDS recommendations knowledge and mothers' compliance with recommendations. Used ttest, chi-squared test, Wilcoxon test, and logistic regression	Mothers scores on education questionnaire (about SIDS risk factors) after 3 mo were higher from intervention than control group; mothers compliance with recommendations after 3 mo was better for control group than intervention group; logistic regression showed benefits in intervention group regarding knowledge of SIDS risk factors, including bed sharing and overheating infants; signigicant assoc b/w non-compliance with sleeping position recommendation and unemployment and absence of postsecondary school education of mother	possible bias introduced if mothers knew that the interview was going to be about (was undisclosed in the study); they could have gathered info leading to improvement in answer rate; questionnaire was designed just for this study (not sure if it's reliable or precise); edu questionnaire was printed, so mothers who were illiterate could	Formative evaluation using an educative questionnaire couple improve maternal awareness if SIDS risk factors and their compliance with recommendations about SIDS prevention
Abel, 2013	New Zealand	To review the past and present interventions, results, recommendations related to the wahakura (flax bassinet designed to reduce SUDI related to bed sharing)	Unsystematic review of literature about SUDI (sudden unexpected death in infacy) interventions targeting bed-sharing among the Maori people	Published articles on Maori safe sleep innovations in New Zealand	30 articles referenced, but no formal inclusion/exclusion critera	None	Summary of literature	No formal	New Zealand has highest SUDI rate in industrialized world; Maori people are overrespresented in SUDI deaths w/in NZ. Wahakura bassinet was designed (2006) to reduce SUDI related to bed sharing. (21% Maori mothers reported bedsharing ; maternal smoking also a large issue). Found to be culturally accepted and a way for midwives to promote other health messages. Pepi-pod ("sister of wahakura") was introduced in 2011, similar but made of different materials. Seems to be accepted, but research is ongoing. A third prototype was introduced with less costly materials, no data	No rigorous data collection or evaluation methods	Need more research on the safety of wahakura (ongoing study currently in place, also see below); need to investigate other causes of SUDI among Maori, including maternal smoking and social deprivation	*Note: The wahakura is promoted in conjunction with a set of simple 'safe sleeping rules' that are based on New Zealand Ministry of Health recommendations; it is designed to reduce bedsharing by providing a separate surface for the baby to sleep on.*

Parent Education Programs

Study	Objectives	Study Design	Study Population	Sample Size	Evaluation Methods	Analysis	Key Findings	Limitations	Conclusion
Ahlers-Schmidt, C. R., Kuhlmann, S., Kuhlmann, Z., Schunn, C., & Rosell, J. (2014)	Develop and provide Safe Sleep Toolkit for providers to facilitate consistent safe sleep message (position, location, and environment) to infant caregivers	Toolkit's focal point is a paper-based, four-item safe sleep checklist. Checklist given to mothers and parents by front desk when they checked in for appointment. Based on responses, providers counseled safe sleep, specifically addressing answers not following AAP recommendations.	Mothers at 28 and 36 week's gestation (at obstetrical clinic) and parents of children ≤ 6 months of age (pediatric clinic) in Wichita, Kansas	n = 501 parents: n= 214 at obstetrical clinic and n=287 at pediatric clinic	Checklists were collected and reviewed by a nurse or physician during appointment		Of the 501 parents who completed the checklist, 88.2% reported safe sleep location, 80.0% safe sleep position, 37.3% no unsafe objects in sleep location, 75.8% having a firm mattress and fitted sheet, and 53.5% talking about safe sleep with other infant caregivers.	Only surveys parents who are receiving prenatal care (obstetrics office) and taking children in for well-visits (pediatric clinic). No follow-up checklist or interview following provider counseling.	Health care providers should focus on the removal of unsafe items and safe sleep education for all infant caregivers.
Ahlers-Schmidt, C. R., Schunn, C., Dempsy, M., & Blackon, S. (2014).	Describe demographics of Community Baby Shower participants and their knowledge/intentions for infant safe sleep after baby shower	The Community Baby Showers, formatted as educational luncheons, offered direct educational counseling to parents and provided portable pack-n-plays	African American women targeted via black churches, physician offices, clinics, black sororities, word of mouth, radio, and print in Kansas.	n = 184 Baby Shower participants; 180 completed the survey	Participants asked to complete brief survey following Community Baby Shower	Of the 157 participants who completed the questions about safe sleep, 53.5% answered all five questions correctly, 38.2% answered four correctly, 7% answered three, and 1.3% answered two.			
Ahlers-Schmidt, C. R., Schunn, C., Nguyen, M., Nimeskern-Miller, J., Ilahe, R., & Kuhlmann, S. (2016).	Determine the effectiveness of a wearable blanket versus control item to increase safe sleep practices among caregivers	Caregivers approached at 1-month well-baby visit. Caregivers randomly assigned to control or intervention group. Participants in intervention group received wearable blankets for infants with safe sleep message. Control group received reusable water bottles without safe sleep message. At 2-month well-baby visit, follow-up questionnaire administered.	Infant caregivers at University of Kansas Pediatric Clinic	n=152 caregivers completed baseline; 115 completed follow-up	Repeat Safe Sleep Checklist and follow-up questionnaire administered to participants at two-month well-baby visit	Within-group differences between pre- and post-intervention analyzed using McNemar Change Test. Between-group comparisons (control versus intervention) analyzed using X2 testing.	Caregivers who received wearable blanket were more likely to report being reminded about safe sleep practices and were more likely to discuss safe sleep with other infant caregivers (compared to control group). However, there was no significant difference between control and intervention groups regarding improved adherence for safe sleep position, location, or environment.	Wearable blanket presented by study personnel, not health care professional, which may have reduced the perceived importance. Self-reported data may be inaccurate.	While the wearable blankets did not significantly improve adherence to safe sleep guidelines, they did act as a reminder for safe sleep and stimulated conversations about safe sleep.
Barnes-Josiah, D. L., Eurek, P., Huffman, S., Heusinkveit, J., Severe-Oforah, J., & Schwalberg, R. (2007)	Assess the impact of 'This Side Up' t-shirts on parental practices in Nebraska	Random sample of new mothers in Nebraska sent postcard with seven questions about safe sleep practices.	Random sample of mothers, drawn from 2004 Nebraska resident birth certificates	n = 3,210 mothers mailed postcard; 831 responded	Postcard with seven questionnaire items (degree to with mothers had received t-shirts as well as attitudes on infant sleep position and SIDS) mailed to mothers	Answers to postcard questions analyzed using SAS 9.12 with comparison sleep position data obtained from Nebraska PRAMS. Stepwise logistic regression models used to predict probability of back sleeping.	Of the respondents, 52.0% reported receiving 'This Side Up' t-shirt. Having received an infant t-shirt or additional SIDS information (brochure, pamphlet, video, nurse, etc) was not a significant predictor of back sleeping.	Low response rate (25.9%) raises question about potential differences between responders and non-responders	Evidence does not support effectiveness of 'This Side Up' t-shirts in influencing parental safe sleep behavior
Burd, L., Peterson, M., Face, G. C., Face, F. C., Shervold, D., & Klug, M. G. (2007)									
Goetter, Mary Catherine, & Stepans, Mary Beth Flanders. (2005)	Determine the effectiveness of a on-on-one teaching intervention in improving patient education and increasing infants put to sleep in supine position	From a convenience sample of new mothers, women were randomly assigned into either the control group or experimental group. Women in the experimental group received targeted educational intervention (SIDS, safe sleep, swaddling) administered by a certified maternal-newborn nurse. Women in the control group received usual care, teaching by a registered nurse to individual or postpartum class with no set	Newly delivered primiparous women in a rural, western, mountain community hospital	n = 61 mothers (29 in control group, 32 in experimental group)	Follow-up interviews were conducted six to seven weeks following teaching intervention. Infant's sleep position from time immediately following hospital to previous evening and day's nap recorded (supine or non supine).	Independent t-tests compared two groups (control vs. experimental) concerning age and education. Chi-square test used to analyze positioning data.		Despite random assignment, there were differences between groups: mean age, disproportionate number of ethnic minorities in control group. Due to lack of exisiting questionnaire, new questionnaire devised with unknown validity.	

Child Care Studies

Study	Objectives	Study Design	Study Population	Sample Size	Evaluation Methods	Analysis	Key Findings	Limitations	Conclusion	Key words/Phrases
Moon, 2008	The goal was to evaluate the effectiveness of a curriculum and train-the-trainer model in changing child care providers' behavior regarding safe sleep practices.	Cross-sectional in design and used a model whereby trainers were traines at a central location. Trainers then provided training to child care providers in the local communities. Child care provider behavior was evaluated through both questionnaires and direct observation.	Selection critera for states (California, Louisiana, Montana, and Pennsylvania) were (1) absence of child care regulations mandating a nonprone sleep position, (2) high absolute number of SIDS deaths, (3) absence of any focused SIDS risk reduction programs, and (4) capacitiy and structure to participate in the project and to report results.	A total of 348 child care programs were recruites, 264 sites (77.0%) completed the study. 190 were CC's (child care center) 74 were FCCH's (family child care home). The number of infants cared for in each programs ranged from 1 to 24. a total of 1212 child care professionals (365 child care facility directors and 847 child care providers) participated in the study.	CCC's and FCCH's were randomly assigned to intervention and control groups. Observers performed an initial unannounced visit to each site, to watch infants being placed for sleep, to inventory sleep polics, and to administer questionnaires to center staff. Trainers used the American Academy of Pediatrics curriculum in educational observation at each site, and staff members completed a questionnaire about logistic barriers encountered in implementation of safe	Univariate analyses, statistical analyses, including X2 tests, qualitative data were analyzed through mechanical coolection in categorical and conceptual groups and interpretation groups	Provider awareness of the AAP's recommendations increased from 59.7% to 68.8 (control) and 80.5 (intervention). Exclusive use of the supine position in programs increased from 65.0% to 7084% (control) and 97.8 % (intervention). Observed supine placement increased from 51.0% to 57.1% (control) and 62.1% (intervention).	29% drop out rate due to closing of the program and infants no longer in care. Potentialo observer bias due to an observer seeing or hearing comments leading them to awareness of a groups assignment. Hawthorne effect due to both groups being observed for the short term.	A sudden infant death syndrome risk reduction curriculum using a train-the-trainer model is effective in improving the knowledge and practices of child care providers. Perceived parental objections, provider skepticism about benefits of supine positioning, and lack of program policies and training opportunities are important barriers to implementation of safe sleep policies.	Google scholar: Child care infant sudden sleep, Daycare sudden infant death, Daycare SIDS, SIDS nonparental child care. child care risk for SIDS PubMed: child day care sudden infant death, sudden infant death prevention SIDS, sudden infant death syndrome risk in child care, safe sleep practices child care, safe sleep practices daycare, child care SIDS risk.
Moon, 2006	To evalutate the effectiveness of the first two years of the Health Child Care America-back to Sleep campaign in improving child care regulations by assessing the inclusion of the elements of a safe sleep environment in the individual state regulations for child care centers and family child care homes.	Not discussed	All 50 states and the District of Columbia	All 50 states and the District of Columbia	Examined regulations available in October 2005 for licensed child care centers and family child care homes in 50 states and the District of Columbiafor specific regulations pertainingto (1) sudden infant death syndrome risk-reduction training for child care providers, (2) infant sleep position, (3) crib safety, (4) bedding safety, (5) smoking, (6) provision of information about sleep positioning policies and arrangements to parents before the infant is enrolled in child care.	Statistical analysis was performed to determine wheather regulations enacted in 2003 (when HCCA-BTS was launched) abd later were more likely to have safe sleep guidelines than those enacted before 2003.	All 50 states and the District of Columbia have designated agencies that set regulations for child care facilites. Since 2003 (to the stude year of 2006) 60 of the 101 state regulations for either child care centers or FCCHs have been revised. More than half of these regulations since 2003 mandate a nonprone sleep position and restrictions on soft bedding in the crib, and the change in these regulations since 2003 is statistically significant. However of the 101 exisiting state regulations only 49 require that infants sleep nonprone, 18 mandate sudden infant death syndrome training for child care providers, 81 have >1 crib safety standard. and	Limitations are linked to the data itself and the difficulty in determining a direct casual relationship between campaign efforts and changes in licensing regulations. Regulations ma have been revised since the review. Finally states not yet able to demonstrate a change in regulations may have made significant strides in educating caregivers using the AAP speakers kit anf other resources.	The initial 2 years of the Healthy Child Care America Back to Sleep campaign have been successful in promoting safe infant sleep regulations. Efforts ust continue so that safe sleep regulations exist in all jurisdictions.	
Kiechl-Kohlendorfer, 2008	Aim was to review the risk of SIDS when infants are in child care. To discuss factors potentially responsible for SIDS in this setting and to describe the impact of previous imformation campaigns on SIDS in CC	Literature review	not discussed	not discussed	not discussed	not discussed	Efforts must continue to ensure safe sleeping practices in CC faciltes. Thye possibility of other explanations for the increased prevalence of SIDS in CC settings, such as changes in infant care or stress, must be considered as well.	not discussed		
Crowley, 2009	To evaluate a pilot training program for 19 child care health consultants, 14 child care directors, and 9 members of community teams, and to asses the effect of the training on nurses' and directors' perceptions of the health consultant role., nurses's knowledge and practice as health consultants, and child care centers policies and practices	A post-test design was employed to assess participants' evaluation of the training program and child care directors' and nurse health consultants' perception of the health consultant role. A pre/post-test design was used to determine the effect of the training on nurse child care health consultants' knowledge, activities, and child care center health policies and practices. pre/post-test knowledge was assessed for all participants.	Health care consultants	19 nurses, 14 child care directors, 9 members of community teams	Data were collected at the conclusion of the program to assess participants' evaluation of the program and the effect of training on directors' and nurses' perceptions of the health consultants' role. Pre- and post-training data were collected regarding nurses' health consultation knowledge in 13 content areas and practice activites, and the effect of training on child care program health and safety policies and practices.	4 instruments were used: training evaluation and perception of the health consultants role, health consultants knowledge, health consultants activities, demographic data evaluation of the training and perceptions of the health consultants role.	Of the 42 participants, 93.5% rated the program as excellent, and many health consultants and directors reports that the training changed their perceptin of the health consultant role. Positive significant differences were found in health consultant knowledge and scope of practice, as well as some health and safety policies and practices post-training.	Lack of random selection, assignment, matched controls, and bliond/observers/data collectors. Hawthorne affect due to increased awareness of activites under the study. No data on the realibility of scores of the Child Care Evaluation Summary are available, and the health consultants self-reported data on policies, health and safety practices, and health consultant activities pre- and post- training.	These findings support the importance of preparation for the health consultant role and increasing evidence of the positive effect of health consultation on the health and safety of child care programs.	
Matthews, 2012	An account of how co-authors developed a 4 year intervention in the state of Arkansas to reduce the statews high risk of SIDS deaths related to child care settings.		Child Care facilites in the state of Arkansas	Child Care facilites in the state of Arkansas	Developed a plan to raise awareness of SIDS in the community and within the healthcare community through media and fund raising events. Made presentations to health care providers and child care providers.		Inital survey of the child care providers that attended the Safe Sleep education classes 47% responded that they did not place infants on their backs to sleep. After the presentation, two months later surveys were mailed and 81% responded back stating that they placed all infants on their backs to sleep.		Petitioned the state of Arkansas Child Care Licensing Board to change policy to state that all infants shall be placed on their backs to sleep. Nov 1, 2011 that policy was adopted.	
Clark, 2013	Based on a prior needs assessment child care providers deemed information on ways to decrease risk of SIDS in child care centers a high priority. Develop a evidence based educational handout for child care providers on ways to decrease SIDS risk and determine current knowledge, attitudes, and behaviors abouts SIDS prevention measures in Colorado child care centers.	Likert 5-point scale	All 250 child care centers that were licensed to provide child care to infants in the state of Colorado.	32 child care centers responded	Used survey methodology to evaluate behavioral changes and improved attitudes towards SIDS prevention.		Only 69% of the providers worked at centers where employess consistently placed infants on the backs to sleep. 91% of the child care providers have not received training on ways to reduce SIDS risk in the past year.	Small sample size		

Hospital-Based Program Studies

Study	Objectives	Study Design	Study Population	Sample Size	Intervention/Evaluation Methods	Analysis	Key Findings	Limitations	Conclusion
Canter, 2015	To determine the impact of a hospital-based educational video on new mother's perceptions and planned practices of safe sleep environment for their infant.	Before and after study design with historical and concurrent controls and a two month prospective intervention.	Women over 18 years old who delivered at WMC, Valhalla, New York between September 1, 2012 and April 30, 2014.	Exposed to video N=43; Not exposed to video N=49	Self-administered survey given to participant within 24 hours of viewing a video (6 minute video viewed individually-ABCs of Safe Sleeping); Survey included questions regarding infant sleeping in bed with parent, on couch, crib, etc. Also, survey asked if parents plan to do any of the above stated after leaving the hospital. All responses required a yes or no response.	Demographics were summarized and compared between exposed and unexposed groups. T Test for continuous data and chi square for categorical data. Chi square test was used to compare frequencies between current and planned sleep practices.	Exposed group (67.4%) reported only placing infant in recommnded sleep setting more often than the unexposed group (46.9%). The exposed group planned to follow safe sleep practices at home more often (72.1%) than the unexposed group (53.1%).	Small sample size, lack of diversity among sample, and not knowing if nursing staff changed behavior.	A hospital-based educational video about safe sleep may be a useful component to parent education prior to being discharged with a newborn.
Gelfer, 2013	To determine if nurses following safe sleep practices in the NICU would effect the behavior of parents at home. Also, to increase the number of infants in the NICU following safe sleep practices prior to being discharged.	Quality improvement project; environmental audits pre, during, and post intervention; parent survey following hospital discharge.	NICU Infants eligible for safe sleep practices that were asleep at time of audit between May and November, 2010. Parents of infants that were in the NICU. NICU nursing staff.	Parents called and replied to survey after discharge n=259 (n=66 for pre intervention phase and 98 responded from post intervention phase); Total crib audits n= 227; Crib audits pre intervention n=62 and post intervention n=79; Nursing staff that completed Back to Sleep training n= 189	Nursing staff and parent education; NICU guidelines for safe sleep practices; crib cards; crib audit tool (single page with information regarding sleep position, anything found in crib, firm sleep surface); and 6 question parent survey (do you put baby on back to sleep, baby sleep in own crib, etc) with counseling provided if not in compliance.	Fisher's exact test to compare before and after implementation.	Following 3 month implementation period in the hospital, there was a significant increase in rate of positioning infants on back (39% vs 83%); there was a significant increase in using a firm sleeping surface (5% vs 96%); and an increase in removing items from crib (45% vs 75%). For parents who responded to the survey, there was a significant increase in parents strictly following safe sleep practices (23% vs 82%); increase in parents putting infant on back to sleep (73% vs 93%); dressing the infant in appropriate clothing (66% vs 93%); no extra blankets in crib (61% vs 97%); and infant sleeping in own sleep space (94% vs 96%).	Small sample size, no demographics collected, self selection of survey respondents, no measure of individual staff knowledge, and since there were multiple components of this intervention implemented at one time, it is unclear which part of the intervention had the most impact.	This multifaceted intervention implementing safe sleep practices in a hospital setting showed successessful compliance in the hospital NICU as well as at home.
Goetter, 2005	To determine if the effectiveness of a parent education program was improved by using a one-on-one teaching approach and to determine if there was an increase in supine positioning of infants.	Quantitative experimental study design	Women between the ages of 18 and 35 who recently gave birth and spoke English as their primary language.	Control group n=29; Experimental group n=32	One on one teaching intervention led by a registered nurse certified in maternal-newborn nursing. An emphasis was placed on SIDS education and AAP guidelines for sleep environment. Follow up 6-7 weeks post teaching intervention.	Independent t-tests and chi square test.	Women in the experimental group were more likely to indicate choosing supine positioning for their infant the first week home from the hospital as well as for nap on the day of the follow up call. However, there was no difference in positioning between the two groups for the night before the follow up call and usual positioning at the time of the follow up call.	There was an unequal number of ethnic minorities in the control group and the average age was different between the two groups. The validity of the questionnaire was unknown. Small sample size.	Maternal choices can be impacted by nurse educators. A one on one teaching intervention can be combined with routine care instructions to reinforce education.
Goodstein, 2015	To determine the effectiveness of a hospital-based safe sleep education program.	Quasi-experimental design; Cross-sectional survey at time of hospital discharge and follow up survey at 4 month well-child visit.	Parents of healthy newborns in two hospitals; one in suburban Baltimore, Maryland (voluntary DVD viewing) and one in south-central Pennsylvania (mandatory DVD viewing). Parents knowledge and practices were compared to the National Infant Sleep Position Study Benchmark.	At hospital discharge N=1092; At 4 month follow up N=490	Pre and post survey; Survey included info on demographics; knowledge of sleep position, location, room temperature, pacifies, and crib environment; behaviors on sleep position, location, crib environment, feedings, and pacifier use; and source and usefulness of education.	Chi square and z test of proportions.	Knowledge on supine sleep position was 99.8% at discharge and 97.3% at follow up; 84.9% still followed supine sleep position at 4 month follow up; 99.8% at discharge and 99.5% at follow up reported crib was safest sleep surface. Crib use in parents room was 91.9% at discharge and 68.2% at follow up; 83.4% of parents never slept with their baby and 4.5% admitted to regularly sleeping with their baby at follow up; 94.7% of parents remembered that nothing is supposed to be in crib at discharge while 93.1% remembered at follow up but 85.9% actually followed recommendation. 97.3% felt good amount of education at discharge and 89.6% felt good amount at follow up; combination of techniques was effective to 63.9% of parents at discharge while 51.8% at follow up.	Social desirability bias; Significant differences in demographics between those at discharge and follow up as well as compared to the National Infant Sleep Position study; the results may not be comparable to diverse populations due to large sample of Whites.	Providing parents with safe sleep education in a hospital based program improves intentions of parents to comply with the American Academy of Pediatrics' SIDS reduction guidelines at home.
Grazel, 2010	To determine the knowledge base NICU nurses have regarding the 2005 AAP recommendations for reducing SIDS. Also, to evaluate the use of these recommendations in the NICU as well as with parent education prior to discharge.	Prospective survey design.	RNs representing 17 NICUs from 2 middle Atlantic states.	N= 430	14 item questionnaire regarding knowledge and application of SIDS reduction practices from 2005 AAP recommendations.	Frequencies and descriptive statistics of participants' responses to show trends and logistic regression to examine the variables associated with placing infant on back to sleep.	The 2005 AAP recommendations for safe sleep were identified by most of the surveyed nurses (85%). Half (50%) of the surveyed nurses selected when the preterm infant is in an open crib when asked about placing healthy preterm infants on back to sleep. Also, about half (45.5%) of nurses surveyed used positioning aids in the term infant's crib and blankets were used to cover the head of the crib to support sleep during the day by 60% of nurses. Safe sleep education was provided to parents prior to discharge verbally (73%), using written materials (53%) and audiovisually (14%). Putting an infant on their back to sleep was the most discussed topic by nurses (84%).	Selection bias, small sample size, reliability of the survey, cannot generalize findings.	Nurses in the NICU are instrumental in providing Safe sleep education and modeling for parents. Therefore, it is vital for nurses to be consistent when modeling the recommended safe sleep practices as well as communicate effectively with parents when providing education.

Hwang, 2015	To increase the percentage of level III NICU infants engaging in safe sleep practices.	Quality Improvement Project; Pre and Post intervention audits.	Eligible infants in the level III NICU at two hospitals in the Boston, Massachusetts area from November 2013 to June 2014.	N=388 with completed audits. South Shore Hospital N=333 and St. Elizabeth's Medical Center N=55.	Nursing education through online module and in person training; Crib cards were attached to each crib (one side describing safe sleep practices and the other describing therapeutic positioning); pre and post intervention audits (examining compliance of safe sleep practices: infant in supine position, flat in crib, no positioning devices, and without blankets or toys in crib).	Descriptives using percentages for categorical variables and logit link generalized linear models for binomial outcomes to compare overall compliance.	Significant increase in overall safe sleep compliance from pre to post intervention (25.9% to 79.7%). Crib cards were found in approximately 80% of cribs during mid and post intervention periods. Significant increase in improvement for each component of safe sleep practices from pre to post intervention.	There was a short intervention period of two weeks, which may have not exposed all the NICU nurses to the project; crib audits were mostly performed during the day, missing out on practices during the night shift; did not assess parental compliance of safe sleep practices.	Integrating safe sleep practices into the routine care of infants in NICUs can be accomplished.
Kistin, 2012	To evaluate the impact of note-taking during newborn education and examine its feasibility.	Randomised controlled trial (pilot)	Mothers on the postpartum wardwho recently delivered an infant at an urban hospital.	N=120; Intervention n=61; Control n=65.	Control group: Standard of care teaching. Intervention group: Received same teaching but were given pen and paper and encouraged to take notes.	Descriptive statistics, Relative risks, Wilcoxin rank sum test, and t-tests.	Participants in the intervention group were more likely to place infant in supine position (88% vs 78%). First time mothers that received intervention were significantly more likely to place infant in supine position to sleep (95% vs 65%).	Small sample size; social desirability bias; Since self-reported actual practice may be different; Group assignment was known to nurses and mothers; increased loss to follow up for intervention group.	Note-taking during newborn education teaching may improve adherence to recommendations for infant care.
Kuhlmann, 2016	To implement specific safe sleep interventions in nonneonatal pediatric units to improve safe sleep practices.	Quasi-experimental study design	Convenience sample of all infants aged 0 to 6 months admitted to the hospital in the general pediatric unit at any of the eight designated children's hospital between February and December 2013.	Pre intervention observations N=264; Post intervention observations N=234	Observations of sleep location, position, and environment both baseline and post intervention; staff education; parent education; policies on safe sleep practices; and having supply storage in patient rooms.	Frequencies and percentages; Chi square test or Fischer's Exact Test.	There was a significant increase in overall safe sleep practices (4.9% vs 31.2%). Safe leep position increased as well post intervention (85.0% vs 96.2%). There was a non significant increase in safe sleep location from 88.6% to 89.7% following the intervention. A safe sleep environment was revealed for 6.4% of infants at baseline and 34.6% post intervention.	Hawthorne effect; observational data; did not collect infant age/milestones attained; no control group; no formal inter-rater reliability; could not assess the impact of each intervention individually.	Consistent messages and modeling of safe sleep practices in the hospital setting are needed. Implementing these specific safe sleep interventions improved overall safe sleep practices, yet improvement is still necessary.
McMullen, 2009	To increase knowledge of safe sleep practices among neonatal nurses.	Performance Initiative	Nursing staff; infants in NICU.	Not indicated	Nurse Education campaign: online education tool on safe sleep practices; crib card based on 2005 AAP recommendations; updated hospital policy on safe sleep; written discharge instructions with safe sleep information with a record of teaching to document ongoing education for parents; all new nurses provided with safe sleep education during orientation; sleep sacks used on all infants in an open crib.	Not Discussed	6 months after completion of education, 98% of infants in NICU were sleeping in supine position in an open crib; 88% of cribs or incubators had a crib card attached. There was a significant difference in nurse compliance of safe sleep practices and educating parents about these practices.	No sample size indicated; since there were multiple components of this intervention, it is difficult to determine which component had the greatest impact.	This model was successful at increasing knowledge of neonatal nurses and can be replicated at other facilities.
Price, 2008	To determine the impact of safe sleep training formats on participant outcomes.	Pilot intervention; Pre and post questionnaire and follow up survey.	Nurses with direct infant care responsibilities across 58 hospitals in Missouri.	Initial evaluation + training N=515; Train the Trainer Pre Test N=277 and Post test N=265; Computer-based training Pre test N=253 and Post test N=261; Follow up survey N=295	Training format was selected by hospital site; pre and post questionnaire regarding safe sleep knowledge, beliefs, and current practices as well as training satisfaction; Follow up survey was conducted three months after all trainings were completed.	T test, chi square test, and analysis of variance.	Both Computer-based training and Train the trainer significantly increased nurses intentions on sleep position. There were significant increases in knowledge and adherence of safe sleep practices. Improvements in these areas remained during the follow up survey three months post education/training.	Difference in sample size; small sample size; self-selection bias; social desirability bias.	This safe sleep curriculum is promising to reducing risks in a hospital setting.
Rowe, 2016	To increase knowledge of safe sleep practices among employees who work on all infant (0-12 months) units at a children's hospital. To increase adherence to safe sleep practices among employees at a children's hospital.	Quality improvement project; Pre assessment survey and post assessment survey after intervention and environmental audits pre and post intervention.	Hospital Staff; nursing staff; & sleeping infants 0-12 months at time of audit (Pre Intervention-June 2013 & Post intervention-Monthly January 2014-June 2014).	Educated Staff n=1656; Staff survey Pre intervention n=615 & nursing staff n=391; Staff Post intervention n=628 & nursing staff n=462; Environmental audits n=991	Environmental audit of sleep environment (position, objects in crib, use of positioning devices, elevation of bed) of all infants 0-12 months that were asleep at the time of audit. Education on safe sleep for staff via online training modules. Education for families including videos and written handouts. Pre and post intervention survey regarding knowledge, beliefs, and understanding of the AAP guidelines from 2011.	Survey analyzed using means and standard deviations for continuous variables and frequencies and percentages for categorical variables. Staff survey compared using two-sample t-test pre and post intervention. Chi square test was used to compare categorical outcomes. Chi square test was also used for audit data pre and post intervention.	Environmental audit: Prior to intervention, 23% of infants were in a safe sleep environment and 34.1% were in a safe sleep environment post intervention which was found to be statistically significant. Staff knowledge increased significantly from pre intervention to post intervention. Also, staff beliefs about safe sleep practices increased significantly. Nursing staff had similar results with significant increase in knowledge after the intervention	Staff survey was not linked pre intervention and post intervention, only group data could be used for analysis; all infants were included (even intubated infants in NICU) making it difficult to examine the data; sample size of environmental audit	This multifaceted approach to implementing safe sleep practices in a hospital setting showed success. Other hospitals in the US could utilize this model to implement safe sleep practices successfully.
Shaefer, 2010	To decrease infant deaths due to unsafe sleep environments by altering nurse's attitudes, beliefs, and practices about safe sleep.	Quality improvement project; Pre test prior to training; post test 6-12 months later.	Nursing staff and mothers of newborns at seven urban hospitals in Michigan from 2004-2007.	Staff Nurses N=635; Crib Audits N=2,739; Mothers of newborns N=2678.	Hospital policy review form; Crib audits; Patient education materials; Questionnaire before in service education and same questionnaire completed 6-12 months after training.	Cross tabular analyses with chi square test; independent t tests	Following education, there was a significant increase in the number of safe sleep items identified correctly by nurses (Pre M=9.4, Post M=10.3); Infants on their back during the crib audit improved after the policy change (80.7% vs 91.9%). Mothers told about safe sleep practices increased significantly from pre to post crib audit (62.7% vs 91.4%).	Findings not generalizeable; did not match responses from pre in service questionnaire to follow up questionnaire; no measurement of parent's behavior over time; individual staff knowledge and behavior was not measured; did not test reliability of tools.	Consistent safe sleep practices can be established in the hospital setting.
Voos, 2015	To increase the percentage of infants engaging in safe sleep practices and to create an educational model regarding safe sleep for the NICU.	Quality improvement project with multiple Plan, Do, Study, Act (PDSA) cycles.	Nursing staff & eligible infants in the NICU at Children's Mercy Hospital in Kansas City, MO.	Baseline N=28; Total patient observations N=260; All nursing staff attended educational sessions N=250.	Revision of NICU policy on safe sleep, including AAP recommendations; safe sleep education and training for staff; bedside education provided to families by nurse as well as a packet with video and written materials; and Safe sleep observation rounds utilizing a safe sleep checklist.	Did not describe.	Compliance to safe sleep practices improved significantly from 21% at baseline to 88% after education and observation.	Sample size; Did not examine family compliance of safe sleep practices, observations were completed during the day, missing out on practices during the night shift; since this approach was multifaceted, it is unlear which intervention had the most impact.	Updating hospital policy, educating staff and families about safe sleep, and sharing data improved compliance of safe sleep practices.

Evaluation Methods Article Reviews

Study	Evaluation Design	Methods	Sampling Frame	Constructs measured	Tools	What tested
Goodstein, 2015	quasi-experimental nonequivalent control group	Surveys at time of hospital discharge and at 4-mo well-child care visit	Parents at 2 community hospital nurseries in south-central Penn and suburban Baltimore, MD.	1. knowledge about sleep location, sleep position, crib enviro, room temp, pacifiers; 2. behaviors regarding use of crib, supine position, no soft bedding or bumpers, comfortable room temp, use of pacifier, no prevention devices, feedings; 3. education information, including sources of education and	4-mo F/U tool is included in Appendix B (p.218) of the study	hospital-based infant sleep safety (ISS) program
Moon, 2004	non-experimental pre-test/post-test design	Pre- and post- surveys (written questionnaires) and parent interviews	Current and prospective parents and other adult caregivers or young infants who were clients of a WIC clinic in Washington, DC	behavior and knowledge regarding sleep position, behavioral intent; follow up interview asked about infant sleep practices (co-sleeping, bedsharing, sleep position)	questionnaire and structured interview tools not included in study	15-mintue health educator-led SIDS prevention session
Kistin, 2012	Randomised control trial	Participants randomized into two groups, stratified according to nurse practitioner, stratified by language. Both groups given standard-of-care newborn teaching, intervention group given pen/paper and encouraged to take notes. Participants called two days later and administered questionnaire with open-ended questions and	Mothers on the postpartum ward of an urban safety-net hospital where three nurse practiticioners split full-time coverage of newborn nursery; newborn gestation age > 35 weeks, mother fluency in English or Spanish, access to telephone. Mothers/babies with prolonged hospitalized or non-	1. infant sleep position. 2. breastfeeding, care seat use, satisfaction with teaching, recall of information.	interview/questionnaire tool not included in study, but diagram of	feasibility nad impact of note-taking during newborn teaching
Goetter, 2005	longitudinal, quantitative experimental design	primiparous mothers aged 18-35 with English as primary language; within a rural, western, mountain commity hospital, between oct 2002 and feb 2003 (convenience sample); mothers whose infants required higher level of newborn care, or who personally knew the researcher, were excluded.	61 women randomly assigned to control/intervention group; intervention took place in hospital just after birth. Follow-up interview occurred 6-7 weeks after teaching intervention	demograhpic data, infant sleep position during first week home from hospital, at the time of the follow-up interview, during the previous night, and for the present day's nap (questionnaire); mothers also asked what influenced her decision on how to lay infant down to sleep during first week	tool not included	one-on-one teaching intervention from registered nurse
Burd, 2007	non-experimental pre-test/post-test design	Obtained consent, did pretest. Intervention done: nine risk factors shared, rational for changes in practices or to reduce risk factors sharred orally. After participant questions were answered, posttest completed.	341 Mothers in two locations: 1. (N=252) community hospital in North Dakota where intervention was delivered by nursing staff; 2. (N=89)home vising program located on a native american reservation in the AAIHS where intervention was completed by home visiting staff	tested knowledge of 9 intervention concepts: avoid drinking when pregnant, avoid smoking when pregnant, avoid smoking around newborn, sleeping-feet at end, back-safest position, stomach-most dangerous position, temperature 65-70, three layers of clothing, no hat needed	the tools (pre and post tests) are attached to Appendix 1. in this	safe sleep education intervention in hospital setting
Ahlers-Schmidt, 2016	randomised control trial	1. consent, 2. safe sleep checklist collected (assessed caregiver-reported infant sleep location, position, and environment. 3.randomly selected to receive 1 of 2 incentives (intervention group: wearable blanket that contained safe sleep messages; control group: water bottle with no messages). 4. F/U 1 mo later at 2-mo well-baby visit. Safe Sleep checklist administered and participants assessed on safe sleep practices. Brief questionnaire about usefulness of incentive.	caregivers of patients in the University of Kansas hospital at 1-month well-baby sistit. Participants English-speaking	Safe sleep checklist: overall safe sleep, safe position (back), safe location, safe environment: firm mattress present, fitted sheet present, no loose blanket, no bumber, no pillow, no stuffed toys, no other items; discussed safe sleep with others. Questionnaire after about perceptions of intervention.	Safe Sleep Checklist and questionnaire not included in study	test effectiveness of a wearable blanket versus a control item to increase safe sleep practices among parents/caregivers
Ahlers-Schmidt, 2014	*not an evaluation study					

Schaefer, 2010	4-year demonstration project; quality improvement process for nursing practice policies	Two phases of quality improvement. Phase 1: Tomorrow's Child (SIDS program) invited to participate by contacting nurse eduator at two hospitals. Both agreed to participate, formed workgroups of staff, nurses, supervisors. Groups met regularly during project, identified policies about SIDS, together developed methods for implementing various policy changes. Group interviews with P1 workgroups were conducted to identify sucecsses/barriers in implementing policies. Phase 2: based on P1 lessons; 5 hospitals approached to review and revise own SIDS and safe sleep policies. Group interviews idenified successes/barriers in implementing policies.	This is part of a 4-year demonstration project to address attitudes and practices among nurses who work with African American parents in urban MI. Total of 7 hospitals, 3 urban areas (2004-2007) with high disparity in death rates b/w Afr Am and Wh parents. 635 staff nurses who worked with these mothers.	1. Infant Safe Sleep Policy Review Form: 10 criteria to assess the presence/absence of procedures that describe how infants were to be placed in their cribs and how infant safe sleep edu was to be provided to mothers and documented; 10 criteria to assess presence/absence of core elements of safe sleep practices in hospital's written policies. 2. Crib Audit Form: collect info on sleep position of infant, bundling of infant, ethncicity of child, and 3 ?s for mother (recieve safe sleep info? have crib at home? plan to use crib?). 3. Nurses' Questionnaire: assess nurse knowledge of risk factors and safe sleep practices.	3 Tools (Infant Safe Sleep Policy Review Form; Crib Audit Form; Nurses' Questionnaire) not included	Evaluate a quality improvement program
McMullen, 2009	Intervention with a "plan-do-check" system. Simple count of adherence.	*No formal evaluation. Instituted new procedures in hospital to improve neonatal nurses' compliance with SIDS prevention regulations. Program included teaching tool, crib card, sleep sacks, and dicharge instructions. Evaluation was simple measure of % infants sleeping in supine position after intervention and nurse compliance with swaddling recommendations.	Neonatal nurses in a hospital's NICU in Syracuse, NY.	Supine sleeping position, swadling or not	No tool used	To evalue a quality improvement program.
Price, 2008	Nonrandomized intervention, pre-post test in nurses practices and	Participants selected training format (either Train the Trainer or Computer-based Training) by hospital site. In each training format, participants responded to a pre and post test questionnaire measuring knowledge, beliefs, and current infant care behaviors as well as satisfaction with the training. Three months after completion of all statewide trainings, the authors also conducted a follow-up survey.	Nurses in Missouri hospitals.	Nurses' practice and intention: supine sleep, prone sleep, side sleep; how much do you know about SIDS? (1-5 scale), level of comfort conveying SIDS to new parents (1-5 scale). Risk reduction beliefs and attitudes: recommending back-to-sleep position to parents, believing most crib bedding is perfectly safe, beliefs about supine position, beliefs about side	Tool not included, but constructs laid out in tables	Evaluate a nurse training program
D'Halluin, 2011	Prospective and randomized study (double-blind)	Recruitment and radonmization. Intervention group recieved educative questionnaire about SIDS during marternity stay in hospital. Both groups given SIDS education intervention. 3 months after intervention, mothers in both groups evaluated on knowledge and observance of SIDS recommendations via a telephone interview	Mothers hospitalized during immediate post-partum period between June 19 and Aug 28, 2005 (France). Average age about 30 years.	Survey did two things: score SIDS knowledge, score observance of SIDS recommendations. Knowledge questionnaire included: room temp, clothing infant when sleeping, behavior when feverish infant, soft or firm sleep surfaces, use of pillows, sleeping position, prone position when awake, position just after eating, main risk factors for SIDS, case for consulting physician. Observance to above 10 factors also questioned.	Tool not included	To evaluate formative evaluation as a new way to improve prevention of SIDS
Hesselink, 2012	non-randomized trial; baseline survey and 4 follow-up	Recruitment, assignment (non-random) to intervention or control group. Needs assessment conducted, program developed based on findings. Intervention done: eight group classes (during pregancy and 1 after), 2 home visits. Questionnaires conducted: baseline, 2 during pregnancy, 2 after birth.	First and second Turkish immigrant mothers living in the Netherlands selected from six midwife practices in Amsterdam selected as intervention group. 5 other practices in Amsterdam and surrounding area used as control group. Between July 2006 and Feb 2008	The intention to engage in healthy infant care practices to prevent SIDS measured by 4 questions on a 3-point scale about (1) sleeping position; (2) using a pillow; (3) using a quilt; and (4) wearing a cap. SIDS prevention behavior measured by 8 questions on a 2-point scale about (1) sleeping position; (2) using a pillow; (3) using a quilt; (4) wearing a cap; (5) where the	Tool not included.	To evaluatie an antenatal program for Turkish immigrants living in the Netherlands
Abel, 2013	*unsystematic review of safe sleep interventions					
Abel, 2015	Exploratory qualitative study. Intervention	12 mothers selected from larger study of use of the wahakura bassinets among Maori. 10 key informants purposively selected for thier knolwledge and expertise on wahakura production or use. Interviews conducted at home or work. Thematic analysis conducted.	Maori mothers and key informants who were familiar with the bed-sharing intervention (bassinet).	Mothers asked general impressions of bassinet, how they used it, whether or how it assisted in breastfeeding, how it differenced from not using one in prev pregnancy (if relevant). Key informants asked about general impressions of wahakura, knowledge of precursors to this model, feedback	Tool not included.	To evaluate cultural relevance, uptake, perceptions of a
Wilson, 2010	*Unsystematic review (summary) of SIDS					
Shapiro-Mendoza, 2011	*Is a pilot population-based surveillance					
Ateah, 2013	Pilot intervention (no control group) with post-intervention questionnaire	Intervention (1hr edu session on SIDS) given during lass class of a prenatal class series (#6 of 6). Questionnaire given immediately following.	Male (N-15) and female (N-16) parents/caretakers enrolled in prenatal classes. Aged 17-56, English-speaking, 2/3rds having completed some post-secondary edu.	Basic demographic info, general questions to test recollections of material provided in info session; whether they had been aware of info prior to edu session; whether info should be shared with all expectant parents; if they planned to use this info when caring for infant; whether the info presented was important; how to best present this info to other parents	Tool not included	To evaluate an antenatal education session about SIDS.

Appendix B: Inventory of Safe Sleep Interventions and Curricula used in Florida

Service DeliveryType	Healthy Start Coalitions															
Program Name/ Company	**Back to Sleep**	**Beds 4 Babies**	**Bright Future/ AAP**	**Channing Bete Company**	**Childbirth Graphics**	**Florida Department of Children & Families**	**First Candle**	**Florida Dept of Health**	**Florida SIDS Alliance**	**NICHD**	**NIH**	**Noodle Soup**	**Right From the Start**	**Safe Sleep Campaign**	**Sleep Right Sleep Tight (Ounce of Prevention)**	**Other Programs**
Program Description	Provides brochure in spanish regarding safe sleep.	Distributes cribs to eligible families as well as provides safe sleep education and public awareness campaign.	Provides book addressing SIDS and general safety concerns.	Provides a booklet on SIDS as well as a pamphlet on breastfeeding.	Provides handout on SIDS risk reduction.	Provides brochures on keeping your kids safe as well as postcards about safe sleep. Also, provide referrals and cribs when needed.	Provides brochures and pamphlets regarding safe infant sleep.	Provides brochures about safe sleep.	Provides education regarding SIDS.	Provides safe sleep education via brochures, guides,flyers, curriculum, booklets, door hangers, papers, modules, videos.	Provides brochures and videos regarding safe sleep.	Provides flyer with information regarding SIDS.	Provides door hangers regarding safe sleep.	Provides flyer on safe sleep.	Provides handouts, videos and PSAs regarding safe sleep.	These programs provide brochures, Info-cards, handouts, magnets, DVDs, flyers, door hangers, curriculum and/or a safe crib to address safe sleep.
Counties																
Alachua			X	X						x	x		x	x	x	
Baker					x	x	x			x	x		x			x
Bay								x		x					x	
Bradford			X	X						x	x		x	x	x	
Brevard	X			X						x		x	x		x	x
Broward	X			X	x	x	x	x		x		x	x	x	x	
Calhoun					x					x		x			x	
Charlotte															x	
Citrus			X							x	x		x	x	x	
Clay					x	x	x			x	x		x			x
Collier	X	X				x		x					x	x	x	
Columbia			X	X						x	x		x	x	x	
DeSoto	X							x		x	x	x	x	x	x	
DiXie			X	X						x	x		x	x	x	
Duval					x	x	x			x	x		x			x
Escambia	X			X	x		x	x	x	x	x	x	x	x	x	x
Flagler															x	x
Franklin								x		x					x	
Gadsden																x
Gilchrist			X	X						x	x		x	x	x	
Glades	X	X				x		x					x	x	x	
Gulf								x		x					x	
Hamilton			X	X						x	x		x	x	x	
Hardee	X	X	X			x	x	x		x	x		x	x	x	x
Hendry	X	X				x		x					x	x	x	
Hernando			X							x	x		x	x	x	
Highlands	X	X	X			x	x	x		x	x		x	x	x	x
Hillsborough	X	X	X			x		x			x		x	x	x	x
Holmes					x					x		x			x	
Indian River	X									x	x		x	x	x	x
Jackson					x					x		x			x	
Jefferson						x				x	x		x	x	x	
Lafayette			X	X						x	x		x	x	x	
Lake			X							x	x		x	x	x	
Lee	X	X				x		x					x	x	x	
Leon	X			X	x	x	x	x	x	x		x			x	
Levy			X	X						x	x		x	x	x	
Liberty					x					x		x			x	
Madison						x				x	x		x	x	x	
Manatee	X					x	x			x		x	x	x	x	
Marion			X	X						x	x		x	x	x	
Martin	X	X									x					
Miami-Dade		X				x	x	x		x	x				x	x
Monroe		X		X	x			x		x		x	x		x	
Nassau					x	x	x			x	x		x			x
Okaloosa														x	x	x
Okeechobee										x					x	
Orange	X								x	x					x	
Osceola										x					x	
Palm Beach	X	X			x	x		x	x	x	x			x	x	x
Pasco	X								x	x	x	x	x	x	x	
Pinellas	X							x		x			x		x	x
Polk	X	X	X			x	x	x		x	x		x	x	x	x
Putnam			X							x	x		x	x	x	
Santa Rosa	X	X			x			x	x	x			x	x	x	
Sarasota	X	X	X		x	x	x	x	x	x		x	x	x	x	x
Seminole	X			X	x		x		x	x	x				x	x
St. Johns					x	x	x			x	x		x			x
St. Lucie					x			x		x			x	x	x	x
Sumter			X							x	x		x	x	x	
Suwannee			X	X						x	x		x	x	x	
Taylor						x				x	x		x	x	x	
Union			X	X						x	x		x	x	x	
Volusia															x	x
Wakulla	X			X	x	x	x	x	x	x		x			x	
Walton														x	x	
Washington					x					x		x			x	

Service DeliveryType	Home Visiting Programs					Multi- Setting	Prenatal Education	Hospital Based		
Program Name/ Company	**Healthy Families**	**Mother Baby Home Care Program**	**Nurse-Family Partnership**	**Parents as Teachers/Parents As Teachers+**	**Project S.A.F.E.**	**Safe Baby**	**FSU Partner's for a Healthy Baby (Before Baby Arrives)**	**Charlie's Kids Foundation**	**Cribs for Kids**	**Halo**
Program Description	Provides education and services for expecting parents/parents with a newborn undergoing stressful life circumstances county-wide(39) and for targeted zip codes (28) in Florida.	This program provides a registered nurse home visit to St. Lucie County residents who deliver a newborn at Martin Memorial Medical Center. The voluntary visit includes physical assessment of mother and baby, home safety assessment and follow up with OB/GYN practitioners if necessary.	An evidence-based, community health program, that partners first-time mothers living in poverty with a registered nurse to improve prenatal care and provide parenting education.	Provides research-based curricula that educates parents on child development and promoting school readiness. PAT+ (Pinellas) focuses services on pregnant women and families with infants ages birth-1 who are substance involved or have a substance use history.	Home visitation program for at-risk pregnant women and their families. Provides safe sleep information using the Florida Department of Health brochures.	HSC of Hillsborough County Curriculum implemented in hospitals, obgyn and pediatric clinics, home visiting programs, child care centers, and other community settings. A hospital and community-based comprehensive curriculum including promoting safe sleep, choosing a safe caregiver and preventing shaken baby syndrome used to educate and empower parents. Also used to train health care professionals	Provides evidence-informed curriculum that includes information on safe sleep. Many home visiting models use this curriculum. Healthy Start Coalitions use "Before Baby Arrives" curriculum for prenatal education.	Provide support to programs that do safe sleep education. Utilize brochures, posters, magnets and "Sleep Baby Safe and Snug" book. The book is used to reinforce safe sleep messages at bedtime. Also, partners with hospitals to distribute books.	Provides safe sleep education using brochures, posters, DVDs, door hangers, etc. Provides cribs to families in need and encourages hospitals and healthy systems to become certified in the National Safe Sleep Hospital Certification program.	Provides safe sleep education, sleep sacks, brochures and door hangers.
Counties										
Alachua	x			x			x		x	
Baker	x					x	x	x	x	
Bay	x						x		x	
Bradford	x						x		x	
Brevard	x						x		x	
Broward	x		x	x		x	x	x	x	
Calhoun	x						x		x	
Charlotte	x					x	x		x	
Citrus	x						x		x	
Clay	x					x	x	x	x	
Collier	x		x	x			x		x	
Columbia	x						x		x	
DeSoto	x			x			x		x	
DiXie	x						x		x	
Duval	x		x				x	x	x	
Escambia	x						x		x	x
Flagler	x						x		x	x
Franklin	x						x		x	
Gadsden	x		x				x		x	
Gilchrist	x						x		x	
Glades	x						x		x	
Gulf	x						x		x	
Hamilton	x						x		x	
Hardee	x			x		x	x		x	x
Hendry	x		x				x		x	
Hernando	x						x		x	
Highlands	x		x			x	x		x	x
Hillsborough	x		x	x		x	x	x		
Holmes	x						x		x	
Indian River	x			x			x		x	x
Jackson	x						x		x	
Jefferson	x			x			x		x	
Lafayette	x						x		x	
Lake	x						x		x	
Lee	x		x				x		x	
Leon	x						x		x	x
Levy	x						x		x	
Liberty	x						x		x	
Madison	x			x	x		x		x	
Manatee	x			x			x		x	x
Marion	x						x		x	
Martin	x						x		x	
Miami-Dade	x		x				x		x	
Monroe	x						x		x	
Nassau	x					x	x	x	x	
Okaloosa	x						x		x	
Okeechobee	x						x		x	x
Orange	x		x				x		x	x
Osceola	x						x		x	
Palm Beach	x		x				x		x	
Pasco	x						x		x	x
Pinellas	x		x	x			x		x	
Polk	x		x			x	x		x	x
Putnam	x						x		x	
Santa Rosa	x						x		x	
Sarasota	x						x	x	x	x
Seminole	x						x		x	x
St. Johns	x					x	x	x	x	
St. Lucie	x	x					x		x	
Sumter	x					x	x		x	
Suwannee	x						x		x	
Taylor	x			x	x		x		x	
Union	x						x		x	
Volusia	x						x		x	x
Wakulla	x						x		x	x
Walton	x						x		x	x
Washington	x						x		x	

Service DeliveryType	Other Parent Education										
Program Name/ Company	**Baby Sleep Basics**	**Boot Camp for New Dads**	**Brehon House**	**First Responders**	**Healthy Mothers Healthy Babies Coalition of Broward County (Safe Sleep)/ DOSE program**	**Baby Boxes**	**NCH Safe & Healthy Children's Coalition of Collier County**	**Safe Kids Northeast Florida (Kohl's Ready, Set, Sleep program)**	**Safe Sleep Sarasota Initiative**	**Success by 6 (SB6)**	**Cribs for Kids**
Program Description	Class that provides SIDS and safe sleep education. Pack n play provided to those who meet specific income requirements.	A community-based program for new dads that provides dads with education, support and skills to be a successful parent.	Home provided to homeless pregnant women and their infants. Offers education, counseling, etc in a safe environment. Provide brochures from Florida Department	Law enforcement officers, fire rescue, EMT's and child protection investigators are providing safe sleep materials and education to families while on scene. Some are also serving as drop off	Provides safe sleep education throughout the community, trains organizations, and provides cribs to those in need. The DOSE program allows first responders to disseminate safe sleep information to	Provides safe sleep education and a baby box for infants to sleep or play in. Also, essential baby supplies are included in the box.	Provides safe sleep posters from National Institute of Child Health and Human Development; a video about SIDS from the Children's National Medical Center; and a video on safe sleep	Program that features a monthly class to moms and dads in need of the education and/or supplies given in class (pack n' play, coordinating sheet, sleepsack). Also, educational fliers are	This initiative provides safe sleep education to all child care centers in the county, provides child protective investigators with safe sleep kits to distribute to families in need along with safe sleep	Program that provides pack n plays free of charge as well as parent education regarding safe sleep practices and SUIDs.	Partners with providers who offer safe sleep education using brochures, posters, DVDs, door hangers, etc. Provides cribs to safe sleep intervention providers (for a fee) and encourages hospitals
Counties											
Alachua											X
Baker								X			X
Bay											X
Bradford											X
Brevard											X
Broward	X	X		X	X						X
Calhoun											X
Charlotte											X
Citrus	X										X
Clay								X			X
Collier							X				X
Columbia											X
DeSoto											X
Dixie											X
Duval		X						X			X
Escambia											X
Flagler											X
Franklin											X
Gadsden			X	X							X
Gilchrist											X
Glades											X
Gulf											X
Hamilton											X
Hardee											X
Hendry											X
Hernando	X			X							X
Highlands											X
Hillsborough		X				X					X
Holmes											X
Indian River											X
Jackson				X							X
Jefferson											X
Lafayette											X
Lake	X										X
Lee											X
Leon			X	X							X
Levy											X
Liberty											X
Madison			X								X
Manatee				X							X
Marion	X									X	X
Martin											X
Miami-Dade											X
Monroe											X
Nassau								X			X
Okaloosa											X
Okeechobee											X
Orange		X									X
Osceola											X
Palm Beach		X				X					X
Pasco											X
Pinellas		X									X
Polk											X
Putnam								X			X
Santa Rosa											X
Sarasota		X		X					X		X
Seminole		X									X
St. Johns		X						X			X
St. Lucie											X
Sumter	X										X
Suwannee											X
Taylor			X								X
Union											X
Volusia											X
Wakulla				X							X
Walton											X
Washington											X

Service DeliveryType	Healthy Start Coalitions																Home Visiting Programs			Multi- Setting	Prenatal Education	Hospital Based			Other Parent Education							
Program Name/ Company	Back to Sleep	Beds 4 Babies	Bright Future/ AAP	Channing Bete Company	Childbirth Graphics	Florida Department of Children & Families	First Candle	Florida Dept of Health	Florida SIDS Alliance	NICHD	NIH	Noodle Soup	Right From the Start	Safe Sleep Campaign	Sleep Right Sleep Tight (Ounce of Prevention)	Other Programs	Healthy Families	Nurse-Family Partnership	Parents as Teachers/Parents As Teachers+	Safe Baby	FSU Partner's for a Healthy Baby (Before Baby Arrives)	Charlie's Kids Foundation	Cribs for Kids	Halo	Baby Sleep Basics	Boot Camp for New Dads	Brehon House	First Responders	Healthy Mothers Healthy Babies Coalition of Broward County (Safe Sleep)/ DOSE program	Baby Boxes	Safe Kids Northeast Florida (Kohl's Ready, Set, Sleep program)	Cribs for Kids
Program Description	Provides brochure in spanish regarding safe sleep.	Distributes cribs to eligible families as well as provides safe sleep education and public awareness campaign.	Provides book addressing SIDS and general safety concerns.	Provides a booklet on SIDS as well as a pamphlet on breast-feeding.	Provides handout on SIDS risk reduction.	Provides brochures on keeping your kids safe as well as postcards about safe sleep. Also, provide referrals and cribs when needed.	Provides brochures and pamphlets regarding safe infant sleep.	Provides brochures about safe sleep.	Provides education regarding SIDS.	Provides safe sleep education via brochures, guides,flyers, curriculum, booklets, door hangers, papers, modules, videos.	Provides brochures and videos regarding safe sleep.	Provides flyer with information regarding SIDS.	Provides door hangers regarding safe sleep.	Provides flyer on safe sleep.	Provides handouts, videos and PSAs regarding safe sleep.	These programs provide brochures, Info-cards, handouts, magnets, DVDs, flyers, door hangers, curriculum and/or a safe crib to address safe sleep.	Provides education and services for expecting parents or parents with a newborn undergoing stressful life circumstances county-wide(39) and for targeted zip codes (28) in Florida.	An evidence-based, community health program, that partners first-time mothers living in poverty with a registered nurse to improve prenatal care and provide parenting education.	Provides research-based curricula that educates parents on child development and promoting school readiness. PAT+ (Pinellas) focuses services on pregnant women and families with infants ages birth-1 who are substance involved or have a substance use history.	NSC of Hillsborough County Curriculum. Implemented in hospitals, obgyn and pediatric clinics, home visiting programs, child care centers, and other community settings. A hospital and community-based comprehensive curriculum including promoting safe sleep, choosing a safe caregiver and preventing shaken baby syndrome used to educate and empower parents. Also used to train health care professionals and community members. Currently in 4 hospitals in Hillsborough County. Handouts, flyers, DVD, etc are provided.	Provides evidence-informed curriculum that includes information on safe sleep. Many home visiting models use this curriculum. Healthy Start Coalitions use "Before Baby Arrives" curriculum for prenatal education.	Provide support to programs that do safe sleep education. Utilize brochures, posters, magnets and "Sleep Baby Safe and Snug" book. The book is used to reinforce safe sleep messages at bedtime. Also, partners with hospitals to distribute books.	Provides safe sleep education using brochures, posters, DVDs, door hangers, etc. Provides cribs to families in need and encourages hospitals and healthy systems to become certified in the National Safe Sleep Hospital Certification program.	Provides safe sleep education , sleep sacks, brochures and door hangers.	Class that provides SIDS and safe sleep education. Pack n play provided to those who meet specific income requirements.	A community based program for new dads that provides dads with education, support and skills to be a successful parent.	Home provided to homeless pregnant women and their infants. Offers education, counseling, etc in a safe environment. Provide brochures from Florida Department of Health regarding safe sleep.	Law enforcement officers, fire rescue, EMT's and child protection investigators are providing safe sleep materials and education to families while on scene. Some are also serving as drop off locations for pack n play donations.	Provides safe sleep education throughout the community, trains organizations, and provides cribs to those in need. The DOSE program allows first responders to disseminate safe sleep information to families and provide education while on scene.	Provides safe sleep education and a baby box for infants to sleep or play in. Also, essential baby supplies are included in the box.	Program that features a monthly class to moms and dads in need of the education and/or supplies given in class (pack n' play, coordinating sheet, sleepsack). Also, educational fliers are distributed on each topic covered in the class. A video regarding safe sleep is shown. Safe sleep tipsheets are distributed in the community. Classes also provided specifically to Spanish-speaking families.	Partners with providers who offer safe sleep education using brochures, posters, DVDs, door hangers, etc. Provides cribs to safe sleep intervention providers (for a fee) and encourages hospitals and health systems to become certified in the National Safe Sleep Hospital Certification program.
Counties																																
Alachua			X	X						X	X		X	X	X		X		X		X		X								X
Baker					X	X	X			X	X		X			X	X			X	X	X	X							X		X
Bay								X		X					X		X				X		X									X
Bradford			X	X						X	X		X	X	X		X				X		X									X
Brevard	X			X						X		X	X		X	X	X				X		X									X
Broward	X			X	X	X	X	X		X		X	X	X	X		X	X	X	X	X	X	X		X	X			X	X		X
Calhoun					X					X		X			X		X				X		X									X
Charlotte															X		X			X	X		X									X
Citrus			X							X	X		X	X	X		X				X		X		X							X
Clay					X	X	X			X	X		X			X	X			X	X	X	X							X		X
Collier	X	X				X		X					X	X	X		X	X	X		X		X									X
Columbia			X	X						X	X		X	X	X		X				X		X									X
DeSoto	X							X		X	X	X	X	X	X		X		X		X		X									X
Dixie			X	X						X	X		X	X	X		X				X		X									X
Duval					X	X	X			X	X		X			X	X	X			X	X	X			X				X		X
Escambia	X			X	X		X	X	X	X	X	X	X	X	X	X	X				X		X	X								X
Flagler															X	X	X				X		X	X								X
Franklin								X		X					X		X				X		X									X
Gadsden																X	X	X			X		X				X		X			X
Gilchrist			X	X						X	X		X	X	X		X				X		X									X
Glades	X	X				X		X					X	X	X		X				X		X									X
Gulf								X		X					X		X				X		X									X
Hamilton			X	X						X	X		X	X	X		X				X		X									X
Hardee	X	X	X			X	X	X		X	X		X	X	X	X	X		X	X	X		X	X								X
Hendry	X	X				X		X					X	X	X		X	X			X		X									X
Hernando			X							X	X		X	X	X		X				X		X		X		X					X
Highlands	X	X	X			X	X	X		X	X		X	X	X	X	X	X		X	X		X	X								X
Hillsborough	X	X	X			X		X			X		X	X	X	X	X	X	X	X	X	X				X				X		X
Holmes					X					X		X			X		X				X		X									X
Indian River	X									X	X		X	X	X	X	X		X		X		X	X								X
Jackson					X					X		X			X		X				X		X					X				X
Jefferson						X				X	X		X	X	X		X		X		X		X									X
Lafayette			X	X						X	X		X	X	X		X				X		X									X
Lake			X							X	X		X	X	X		X				X		X		X							X
Lee	X	X				X		X					X	X	X		X	X			X		X									X
Leon	X			X	X	X	X	X	X			X			X		X				X		X	X			X		X			X
Levy			X	X						X	X		X	X	X		X				X		X									X
Liberty					X					X		X			X		X				X		X				X					X
Madison						X				X	X		X	X	X		X		X		X		X				X					X
Manatee	X					X	X			X		X	X	X	X		X		X		X		X	X				X				X
Marion			X	X						X	X		X	X	X		X				X		X		X							X
Martin	X	X									X						X				X		X									X
Miami-Dade		X				X	X	X		X	X				X	X	X	X			X		X									X
Monroe		X		X	X			X		X		X	X		X		X				X		X									X
Nassau					X	X	X			X	X		X			X	X			X	X	X	X							X		X
Okaloosa														X	X	X	X				X		X									X
Okeechobee										X					X		X				X		X	X								X
Orange	X								X	X					X		X	X			X		X	X			X					X
Osceola										X					X		X				X		X									X
Palm Beach	X	X			X	X		X	X	X	X			X	X	X	X	X			X		X				X				X	X
Pasco	X								X	X	X	X	X	X	X		X				X		X	X								X
Pinellas	X							X		X			X		X	X	X	X	X		X		X				X					X
Polk	X	X	X			X	X	X		X	X		X	X	X	X	X	X		X	X		X	X								X
Putnam			X							X	X		X	X	X		X				X		X								X	X
Santa Rosa	X	X			X			X	X	X			X	X	X		X				X		X									X
Sarasota	X	X	X		X	X	X	X	X	X		X	X	X	X	X	X				X	X	X	X		X		X				X
Seminole	X			X	X		X		X	X	X				X	X	X				X		X	X		X						X
St. Johns					X	X	X			X	X		X			X	X			X	X	X	X			X					X	X
St. Lucie					X			X		X			X	X	X	X	X				X		X									X
Sumter			X							X	X		X	X	X		X			X	X		X			X						X
Suwannee			X	X						X	X		X	X	X		X				X		X									X
Taylor					X					X	X		X	X	X		X		X		X		X				X					X
Union			X	X						X	X		X	X	X		X				X		X									X
Volusia															X	X	X				X		X	X								X
Wakulla	X			X	X	X	X	X	X	X		X			X		X				X		X	X					X			X
Walton														X	X		X				X		X	X								X
Washington					X					X		X			X		X				X		X									X