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# Integrating Safe Sleep Practices into a Pediatric Hospital: Outcomes of a Quality Improvement Project

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A quality improvement project for implementing safe sleep practices (SSP) was conducted at a large, U.S. children's hospital. The intervention involved education of staff and standardization of infant sleep practices utilizing a multifaceted approach. Staff surveys and environmental audits were conducted pre- and post-intervention. Safe Sleep Environment (SSE) audits showed an improvement from 23% to 34% ( $p < 0.001$ ) post-intervention. Staff confidence to provide education to caregivers on SSP showed a significant increase. Results from this project demonstrate a successful approach to implement SSP in the hospital setting. Infant safe sleep practices have the potential to reduce infant mortality.

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INFANT MORTALITY IN the United States (U.S.) continues to be higher than in other developed countries. In 2010, the rate for infant mortality in the U.S. was 6.1 per 1000 live births (MacDorman, Matthews, Mohangoo, & Zeitin, 2014). This rate has the U.S. ranked 26th among Organization for Economic Co-operation and Development countries. Because infant mortality is an important indicator of national health, it is concerning that the rate of infant mortality in the U.S. is continually higher than other developed countries (MacDorman et al., 2014).

Furthermore, Arkansas's infant mortality rate is 7.3 per 1000 live births. This equated to 290 infant deaths in the state in 2009 (Arkansas Department of Health (ADH), 2009).

This rate was higher than the U.S. infant mortality rate of 6.39 per 1000 live births for the same year. Infant mortality is a public health problem at the state and national levels that needs to be addressed (Arkansas Department of Health (ADH), 2009).

Infant mortality in the U.S. includes the approximately 4000 infants who die suddenly every year with half of these deaths secondary to Sudden Infant Death Syndrome (SIDS) (Centers for Disease Control and Prevention (CDC) (CDC), 2013). SIDS is defined as a sudden death of an infant who is less than 1 year of age and that is unable to be explained after a thorough investigation. Components of the investigation include autopsy, review of all clinical history, and examination of the death scene (Centers for Disease Control and Prevention (CDC), 2013). After a complete forensic investigation, the cause of death can be ruled as SIDS versus other causes such as a clinical cause, homicide, or Accidental Suffocation and Strangulation in Bed (ASSB). The leading cause of infant

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death secondary to injury is ASSB, which can include suffocation by bedding, a person rolling over on top of the infant, the infant becoming wedged or trapped between two objects, and accidental strangulation (Centers for Disease Control and Prevention (CDC), 2013). The rate of ASSB in 2013 was 20.8 per 100,000 live births (American Academy of Pediatrics, 2011b). Moreover, it is important to note that since the implementation of the “Back to Sleep” campaign by the American Academy of Pediatrics (AAP) in 1992, the overall rate of SIDS has declined by over 50%; yet the rate of deaths by ASSB has increased significantly. This increase in ASSB may be secondary to deaths that had previously been classified as SIDS now being properly identified as ASSB (Centers for Disease Control and Prevention (CDC), 2011; American Academy of Pediatrics, 2011a).

In 2011, the AAP expanded the safe sleep guidelines going beyond “Back to Sleep” and incorporating the infant sleep environment (American Academy of Pediatrics, 2011b). The guidelines express the importance of a firm sleep surface and recommend room sharing over bed-sharing secondary to the risk of SIDS and ASSB. For the same reason, keeping soft objects, such as stuffed animals, positions, and bumpers out of the crib is also recommended. Moreover, the significance of prenatal care; breastfeeding; and avoiding smoking, alcohol consumption, and illicit drug use during and after pregnancy are emphasized. The expanded guidelines include offering a pacifier, avoiding overheating, receiving immunizations on schedule, avoiding products that claim to reduce the risk of SIDS, utilizing cardiorespiratory monitors for SIDS reduction, and the importance of infants receiving supervised tummy time (American Academy of Pediatrics, 2011b).

In addition, it is important that health professionals educate and model safe sleep practices (SSP) because they influence caregiver sleep practices at home (Gelfer, Cameron, Masters, & Kennedy, 2013). However, integrating SSP into the in-patient hospital setting is challenging because there is a significant knowledge gap in infant safe sleep recommendations among healthcare providers (Gelfer et al., 2013; Grazel, Phalen, & Polomano, 2010). Hospital staff may not be aware of the current safe sleep recommendations, which is evidenced by the common hospital practices of elevating the head of bed, nesting the infant with blankets, and use of other positioning devices that conflict with AAP recommendations. Facing these challenges and a high state infant mortality rate, a multidisciplinary team at a large, mid-south U.S., tertiary care children’s hospital initiated a project to improve safe sleep practices at our facility.

## Local Problem

In Arkansas the infant mortality rate and rate of infant death from SIDS are consistently higher than the national rates. In 2010, the rate for SIDS related deaths in Arkansas was 133% higher than the U.S. rate of 0.5 per 1000 births (United States Department of Health et al. (DVS), 2015). With these rates, there is the potential to save 43 infants every year by dropping the state rate to that of the national

level. With this type of data and lifesaving potential, the hospital felt an obligation to act and work to improve the infant mortality and SIDS rates in the state by educating and modeling SSP for patients and families.

## Project Aims

The aims of this quality improvement project were to increase knowledge of and adherence to SSP on the inpatient units that provide care for infants. The primary question to be answered was what impact would education and policy implementation have on SSP adherence in the hospital setting. By developing a safe sleep educational program and standardizing infant sleep practices across all intensive care and medical–surgical units caring for infants 0–12 months of age, our organization was able to implement evidence-based SSP.

## Methods

### Setting and Ethics

In April 2013, the Safe Sleep Taskforce was established to examine SSP at the 370 bed, tertiary care, free-standing children’s hospital that includes 10 medical–surgical units, 3 intensive care units, multiple ambulatory clinics and an emergency department. The project received administrative review and was deemed not human subjects research by the university-affiliate institutional review board. Risks to participants were minimal. There were no conflicts of interest identified by the authors or taskforce members. Project activities were part of hospital education and quality improvement activities; identifiable information about patients, parents, and staff was not collected. The project was carried out over a 14-month period from April 2013 to June 2014.

### Planning and Implementation

A quality improvement model was adopted for the project to translate the evidence-based AAP’s SSP into practice at our facility. The interdisciplinary project team of 20 worked closely with all stakeholders including nurses, administration, physical therapists, child life, social work, interpreter services, and physicians. Initially the team met one or two times per month to review the literature, define the project, discuss implementation plans, and identify barriers to implementation. Additionally, a small sub-group of 5 nursing educators met more frequently to develop the specific detail for SSP education.

A data-driven quality improvement strategy known as the “Define, Measure, Analyze, Improve, Control” (DMAIC) methodology (Borror, 2009, p. 331-332) was utilized to outline and define the problem statement, project scope, goals, process and outcome measures and planning of the intervention. The goal was to increase the proportion of hospitalized infants in a safe sleep environment by January 2014 and to sustain the improvement throughout the calendar year. Process measures for the project included staff education development, staff education completion rate, and percentage of infant caregivers educated on SSPs. The overall outcome measure was the percentage of hospitalized infants in a safe sleep environment.

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