



# Shaken Baby Syndrome: A hospital-based education and prevention program in the intermediate care and the newborn intensive care nurseries



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## KEYWORDS

Shaken Baby Syndrome;  
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**Abstract Objectives:** To educate parents of hospitalized infants on the prevention of Shaken Baby Syndrome (SBS) and to measure their comprehension.

**Methods:** This study was an educational prevention program on SBS. Parents whose infants were hospitalized participated in the study. Staff nurses educated parents using a script, a video on SBS, written information and role played with an infant doll. Parents voluntarily sign a commitment statement and are called back at 7 months with a telephone survey.

**Results:** There were 802 parents who participated with a 20% participation in the telephone follow-up phone call. The large majority of parents remembered the nurse, video, SBS interactive doll and information received. Although there were 39 incidents of SBS in NM during the study, no infant was discharged from one of the participating units ( $p < 0.05$ ).

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*Conclusions:* Education of parents of prevention of SBS significantly reduces child abuse, even in high risk infants.

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Shaken Baby Syndrome (SBS) is a subset of Abusive Head Trauma (AHT), and a leading cause of child abuse death in children under one year of age in the United States (Simmonnet et al., 2014). At least 1 of every 4 infants who are violently shaken dies from this form of child maltreatment (Carbaugh, 2004; Center for Disease Control, 2015). The estimated rate of SBS is 30 cases per 100,000 children aged 1 year or younger (Keenan et al., 2003). A 10 year retrospective study found that 19% of hospitalized children with SBS with a median age of 4.6 months, died from SBS (King et al., 2003). Survivors of shaking injury often have long-term disabilities ranging from mild learning disorders to profound cognitive and developmental delays, paralysis, cortical blindness, and in some cases, a permanent vegetative state (Center for Disease Control, 2015). More than 80% of those abused have lifelong brain injuries (Barr, 2012). King et al. (2003) found that 55% had a continued neurological deficit and 65% had visual impairments related to shaking injuries.

In 2008 it was estimated that child abuse costs the health care system approximately \$124 billion annually (Fang et al., 2012). Peterson et al. (2014) states that the estimated medical costs associated with the initial treatment and the following 4 years for children who are victims of SBS is \$47,952 per patient. Furthermore, these children often have long-term disabilities and invariably require special education services (Peterson et al., 2014). An example of the long-term medical impact of SBS can be seen in a 6 year case study in which the victim sustained diffuse brain injury resulting in hemiplegia, cognitive impairment, behavioral disorders and an IQ below 40 by age 6 years and 8 months of life (Laurent-Vannier et al., 2009).

These mortality and morbidity statistics demonstrate the seriousness of SBS and the need to prevent this form of child abuse. Dias et al. (2005) conducted a hospital-based study in 8 counties in western New York State hospitals where parents were provided education about SBS. Dias' hospital parental education program was successful in improving parents' education about SBS and decreasing the incidence. Our goal was to implement Dias' evidence based, hospital parental education program in the special care nurseries at the University of New Mexico Children's Hospital to decrease the incidence of SBS.

## Infant crying can trigger SBS

Infant crying is often a trigger that contributes to parental frustration and the act of shaking (Center for Disease Control, 2015; Barr, 2012; Barr, 2006; Meskauskas et al., 2009). However, crying is a normal behavior of infants. Barr et al. (2006) performed a retrospective study on 273 California hospitalized infants diagnosed with SBS which compared the normal crying curve with the incidence of SBS. They assert, "In short, the age-specific incidence curve in hospitalized Shaken Baby Syndrome cases has a similar starting point and a similar shape to the normal crying curve." p13. The problem is not that infants cry, but the response to crying by their parents or caregivers. Adults who cause SBS are most likely to mention crying as a trigger for shaking (Barr et al., 2006). For example, in a 7 year retrospective observational study examining forensic evidence, 29 cases of AHT were identified in which the perpetrator admitted to inflicting injury by shaking the infant violently (Adamsbaum et al., 2010). The perpetrators in 16 of these cases reported multiple episodes of shaking the infant and in 10 cases they reported shaking the infant because the infant would stop crying (Adamsbaum et al., 2010). Thus, some of the perpetrators continued the shaking because it stopped the crying!

## Risk factors

Just as inconsolable or frequent crying of an infant has been identified as a trigger for SBS, there are additional risk factors that have been identified for both infants and parents or caregivers. The highest incidence for SBS or AHT occurs in male infants under one year of age (Keenan et al., 2003; King et al., 2003; Laurent-Vannier et al., 2009; Barr, 2006; Kesler et al., 2008; Tursz and Cook, 2014).

Multiple births (Keenan et al., 2003) and prematurity (Tursz and Cook, 2014; Hoffman, 2005) have also been associated with placing infants at higher risk for SBS. Ill or premature neonates often experience prolonged separation from their parents and many are discharged home requiring additional care. Hoffman (2005, p135) states "After hospital discharge, preterm infants may

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