

Philanthropy Profile

Preventing Shaken Baby Syndrome in North Carolina

Each year in the United States, as many as 1,400 infants receive medical treatment for inflicted traumatic brain injury, commonly known as shaken baby syndrome. Approximately 25% of these children die; most of the survivors have lifelong neurological damage from their injuries, which include subdural and retinal hemorrhages, damage to the spinal cord and neck, and fractures of the ribs. Depending on the injuries and their severity, medical costs might exceed \$1 million.

According to research, the highest-risk period for abusive head trauma in infants is between 2 and 4 months of age, when infant crying might last for more than 5 hours per day—even when a child is perfectly healthy [1]. The relentless crying can be frustrating for parents, especially if they are not aware that it is part of normal behavior among babies. “No one thinks they will shake their infant,” says the National Center on Shaken Baby Syndrome (NCSBS; Ogden, UT), “but research shows crying as the number one trigger leading caregivers to violently shake and injure babies” [2].

Nationally, it appears that cases of abusive head trauma in children are increasing. In a study led by Children’s Hospital of Pittsburgh (Pittsburgh, PA), researchers collected data on all cases of unequivocal abusive head trauma, before the economic recession and during the recession [3]. The number of cases increased from 6 per month before December 1, 2007, to 9.3 per month after that date.

“Our results show that there has been a rise in abusive head trauma, that it coincided with the economic recession, and that it’s...happening on a much more widespread level,” lead researcher Rachel Berger said in a news release [3]. “This suggests we may need to dramatically increase our child-abuse-prevention efforts now and in future times of economic hardship.”

Working Together

In North Carolina, a promising prevention program is now helping caregivers learn about the triggers and dangers of shaken baby syndrome. Project leaders hope the Period of PURPLE Crying: Keeping Babies Safe in North Carolina program (available at: <http://www.purplecrying.info/index.php?loc=mb1r3p6>) will reduce hospitalization and death from abusive head trauma by 50%. Several stakeholders—including the NCSBS, the Center for Child and Family Health (Durham, NC), and the University of North Carolina (UNC) Injury Prevention Research Center (Chapel Hill, NC)—are leading the effort.

The project is funded through September 2012, using 3 grants totaling \$7 million. The Duke Endowment (Charlotte, NC), for example, is the lead funder for implementing a hospital- and community-based intervention. The Centers for Disease Control and Prevention (Atlanta, GA) is funding the evaluation of the statewide program. The Doris Duke Charitable Foundation (New York, NY) is the lead funder for developing and piloting a media campaign. All 3 groups also took cofunder roles for various parts of the project.

The Doris Duke Charitable Foundation, established in 1996, supports 4 national grant-making programs, which include child-abuse prevention. This foundation has funded efforts around shaken baby syndrome for several years. The Duke Endowment focuses its resources on children, health care, higher education, and rural churches within the Carolinas. Children at risk for abuse and neglect have been a focus of The Duke Endowment’s Child Care program area since 2002.

“In our view,” says Gene Cochrane, president of The Duke Endowment, “it is through this type of collaboration that such complex social problems can be prevented effectively.”

Period of PURPLE Crying

Developed by the NCSBS, the Period of PURPLE Crying (available at: <http://www.purplecrying.info/>) uses data from 4 decades of research on normal crying behavior among infants. Experts have found that

crying bouts increase around 2 weeks of age, peak at 2-3 months of age, and then decline. These data also reveal that babies can sometimes cry for hours despite attempts to soothe them.

The program helps caregivers recognize the characteristics of normal crying behavior among infants by use of an acronym, "PURPLE," that describes the behavior (ie, *P*, peaks at 2 months of age; *U*, is unexpected; *R*, the child resists soothing; *P*, the child appears to be in pain; *L*, is long-lasting; *E*, usually occurs in the evening). It also provides coping strategies and explains the dangers of shaking an infant. For example, caregivers should respond to their baby with "comfort, carry, walk, and talk"—but it is also "OK to walk away," if and when the crying becomes too frustrating. Under any circumstance, it is "never OK to shake or hurt," to try to stop the crying.

During 2003-2007, the NCSBS tested the program through randomized, controlled trials in Seattle, Washington, and Vancouver, British Columbia. More than 4,400 parents participated. The British Columbia Ministry of Children and Family Development funded the Canadian research; the Doris Duke Charitable Foundation and the George S. and Dolores Dore Eccles Foundation (Salt Lake City, UT) funded research in the United States.

According to the NCSBS, both studies found a "statistically significant increase in the knowledge about normal infant crying." One showed a "statistically significant increase in understanding the dangers of shaking an infant," and the other showed an increase in "walk away behavior" when the mother became frustrated [4].

Spreading the Word

In 2008, Utah became the first state to implement the Period of PURPLE Crying program in all state hospitals and birthing centers, but the effort in North Carolina represents the largest statewide implementation to date. The intervention is reaching caregivers through the following 3 "doses": before the baby leaves the hospital, at a medical appointment in the first month, and through a media campaign.

For the first dose, team members from the Center for Child and Family Health have partnered with every birthing facility (85 hospitals and 1 birthing center) in the state; at each facility, at least 80% of staff members were trained in how to implement the program. While the child is still in the newborn nursery, every new parent receives a talk, a 10-minute video, and printed material on infant crying.

"We've made great efforts to emphasize the importance of showing the video to parents before [the mother and child] are discharged from the hospital," says Kelly Sullivan, a licensed psychologist who is managing the North Carolina implementation through the Center for Child and Family Health. "We've provided hospitals with portable DVD players if they needed them. We felt that, if parents see the DVD in the hospital, it's likely to be more memorable at the time when they need it."

The second dose involves county health departments, specialists in early intervention, and pediatricians and family physicians in prenatal classes and postnatal services and during sick- and well-child checks. For this part of the intervention, which began in May 2009, the Center for Child and Family Health team contacted a majority of medical practices and health departments in all 100 counties of North Carolina.

The third dose involves a media campaign, which was launched in September 2009 through a partnership with the UNC School of Journalism and Mass Communication. The campaign was designed to reinforce the prevention message by reaching family and friends of new parents, and it included a Web site, radio advertising, and cable-television advertising.

Testing for Results

While the 2 randomized, controlled trials in Washington and British Columbia tested the effectiveness of Period of PURPLE Crying materials to change the "knowledge, attitude, and behavior" of parents, the North Carolina study is looking at whether the intervention changes the *numbers of cases*. Because of unique baseline data on the frequency of shaking, experts say that North Carolina was the perfect place to test the effectiveness of a statewide program. "We know what the rates were in North Carolina before we implemented this program," Sullivan says, "and no other state knows that. We have the first published statewide baseline anywhere."

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With funding for 5 years, the intervention includes an extensive outcome and process evaluation to look at program delivery, effectiveness, costs, and benefits. According to Sullivan, the outcome evaluation “will test whether a statewide primary prevention program...can reduce hospital admissions and deaths from abusive head trauma.”

Researchers are looking for other kinds of results, as well. For example, they recently started studying the number of calls that parents are making to an after-hours nursing line. Sullivan says calls regarding crying have decreased.

If data show that the program works here, it could be replicated in statewide efforts across the country. “To have a long-term positive effect on the reduction of shaken baby cases, it’s really about achieving a cultural change,” Sullivan says. “If you look at any other form of maltreatment—physical abuse, sexual abuse, et cetera—the causes are much broader, and it’s much harder to intervene. What makes shaken baby syndrome different is that we believe we have education that can actually reduce the frustration that occurs for people. And if we can reduce the frustration, we believe we can reduce the incidence of this form of child maltreatment.” NCMJ

REFERENCES

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