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OREGON PUBLIC HEALTH DIVISION • DEPARTMENT OF HUMAN SERVICES

IT'S A CRYIN' SHAME: SHAKEN BABY SYNDROME IN OREGON

Except perhaps when we hear that first cry in the delivery room, all but the most hardened sadists among us are disturbed by a crying baby. For parents the near psychosis that can occur with the birth of an infant, compounded by lack of sleep and changing routines in the first few months, can magnify the stress of a crying baby. This edition of the *CD Summary* describes what's known about Shaken Baby Syndrome (SBS), examines research on normal crying patterns that informs prevention efforts for SBS, and provides resources to help healthcare providers give anticipatory guidance to parents and parents-to-be.

WHAT IS SBS?

SBS is a form of intentional head trauma inflicted upon infants by violent shaking, with or without contact between the head and a hard surface. Because of the relatively large size of a baby's head relative to its body, shaking produces torsional forces on the brain that result in subdural hematomas, diffuse axonal injury and retinal hemorrhages, all of which can have devastating consequences, including brain damage, blindness, and death.

HOW FREQUENT IS SBS?

It is estimated that 31–35% of children with inflicted head injuries have no external signs of injury.[1,2] Lack of external injury and a presentation of nonspecific complaints contribute to cases going undetected.[1,2] For these reasons, it is difficult to know with certainty the rate of SBS in the U.S. However, the best estimates available suggest annual rates of approximately 30 per 100,000 among children aged two and younger with a peak incidence at 12 weeks of age (Fig. 1).[1]

In Oregon, our data on the incidence of SBS are similar to the national data. From 2000 to 2004, there were an average of nine new SBS cases admitted each year to Oregon hospitals. Their ages ranged from 1–24 months with a median age of 4 months, and 61% were male. In cases where the perpetrator was known, the perpetrator was identified as the father in 56% of cases, the mother in 12% of cases and the mother's boyfriend in 12% of cases.[3]

Victims were hospitalized for an average stay of six days, with a range from 0–42 days. Fifty-one percent were discharged home, 34% were placed in protective custody, 8% died, 3% were transferred to another facility, and 3% were released to the custody of someone other than the parent.

SBS is expensive, both in human and financial terms. National data suggest that for those who survive, the average ongoing medical costs exceed $300,000 per child.[4] Total treatment charges in Oregon from 2000–2004 were $2,147,414, with an average charge per patient of $42,106 and a range of $4,389 to $260,208. The primary payer was the Oregon Health Plan for 81%.[3]

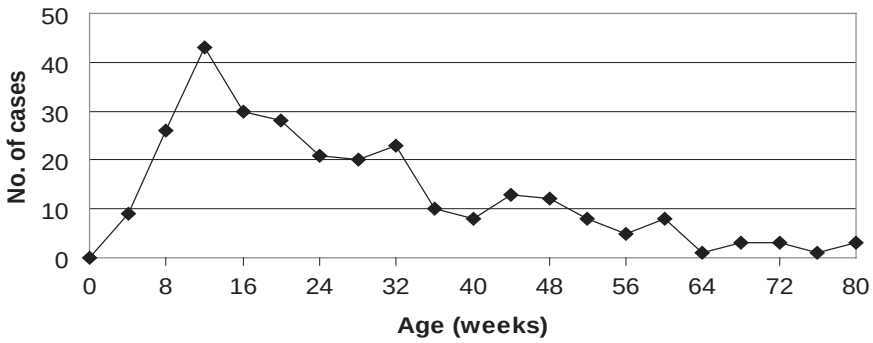
Although, clearly under-reported, about 300 children less than age one die due to SBS in the U.S. each year.[1] A variety of studies document SBS mortality rates in the U.S. from 13–30%.[5,6] In Oregon from 2003 to 2005, five children died due to SBS.[7]

CRYING-OLOGY

Crying is believed to be the most frequent stimulus for SBS.[8] Crying-ologists* have documented normal crying patterns, and shown that they change with age. The "average" baby cries for more than two hours each day. Crying bouts typically begin in the second or third week of life, and peak around week six, declining thereafter (Fig. 2).[9] Crying episodes are most common in the late afternoon or evening–not insignificantly corresponding with transitions from day care to parents and/or from a long day at work to home. Crying often begins suddenly and for no apparent reason and the baby may be difficult or impossible to comfort. Colic is the most extreme form of crying behavior, and is common. It has been defined using the rule of "3s": inconsolable crying that occurs for at least three hours a day, at least three days a week, for at least three weeks.

An inconsolably crying infant is extremely frustrating for even the most well-defended of parents. The shame which a parent may feel at not being able to soothe an infant can be a potent trigger for an angry outburst. Unfortunately, shaking a baby will stun it and make it stop crying, and this will provide positive feedback to a parent trying to get a baby to stop screaming. For this reason, it is believed that often the shaking episode that brings a baby to the emergency room is the last in a series of shaking events that started days or weeks earlier. This may be one reason why the peak age for SBS cases

Figure 1: Age-specific incidence of SBS in CA hospitals, 1996–2000‡



*what a way to earn a living, but somebody's gotta do it.

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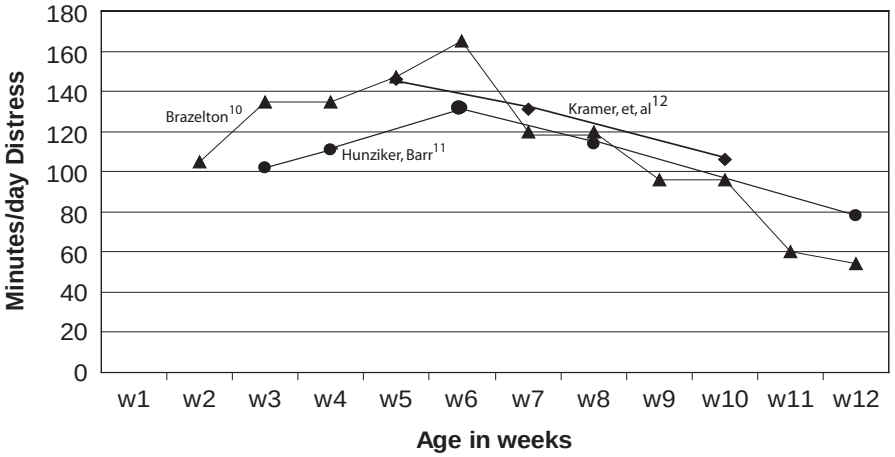
Figure 2: Crying amounts and patterns from three North American studies*



presenting to the emergency room may be slightly later than the peak age for crying (compare Figs. 1 and 2).[9]

ANTICIPATORY GUIDANCE FOR PARENTS

Don't shake your baby is good advice, however, research in child abuse prevention is proving that training parents and supporting parenting skills is more effective than warnings. Helping parents, particularly first-time parents, develop realistic expectations about how much their infant is likely to cry, and educating them about the dangers of shaking can help prevent SBS. Letting parents know that crying behavior is normal and will diminish with age may also help some parents see "the light at the end of the tunnel."

Self-care for parents is also important and can ease the burden of frustration that a crying baby elicits. Parents need to recognize their limits, use self-soothing behaviors (such as deep breathing), and know when to call the doctor or ask someone else for help or relief.

Parent education programs on SBS have been implemented at the hospital level in several states. Discussions about implementing these programs in Oregon is currently underway.

SBS RESOURCES

- What to do when your newborn cries *www.mayoclinic.com/print/healthy-baby/PR00037/METHOD=print*
- National Center for Shaken Baby Syndrome *www.dontshake.org*
- The Period of Purple Crying prevention materials, DVD for parents *www.PURPLE@dontshake.org*
- Shaken Baby Syndrome, What You Need to Know *www.oregon.gov/DHS/ph/ipe/shaken.shtml*
- How to report child abuse *www.oregon.gov/DHS/ph/ipe/report.shtml*

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‡ Figures reprinted with perrmission from *Child Abuse and Neglect*, 30(2006) 7–16.