

Virginia Injury Update

Volume 4, Issue
3, Oct 2010

Abusive Head Trauma (Shaken Baby Syndrome) In Virginia, 2004-2008

Dear Injury Prevention Advocate,

I have yet to meet a parent that hasn't at some point been frustrated by an inconsolable child. As parents we think that we should always be able to comfort our children; however, crying, even excessive crying, is part of the normal development of infants.

Unfortunately, some parents/caregivers find themselves without the skills to cope with the crying of a child. This can result in extremely frustrated and angered parents/caregivers who resort to violently shaking or hitting a child to make him/her stop crying. Children that are subjected to this type of violence are left to deal with the ramifications for the rest of their lives, if they survive. Of the children that died from Shaken Baby Syndrome in Virginia during 2003-2007, the perpetrator in 54% of the cases was a parent or guardian.

This report uses data over a five year period from Virginia hospital discharges and the Virginia Violent Death Reporting System to better understand head injuries among infants and toddlers attributed to Shaken Baby Syndrome.

Shaken Baby Syndrome is a preventable form of severe child abuse. By helping parents, caregivers and others understand that crying by infants and toddlers is normal, understand the dangers of violently shaking a child, identify potential risk factors and learn skills to cope with the frustration that often accompanies an inconsolable child we can prevent this public health problem.



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Introduction

Shaken Baby Syndrome (SBS), a form of abusive head trauma and inflicted traumatic brain injury (TBI), is a leading cause of child abuse deaths in the United States.¹ SBS may result from shaking alone or from impact (with or without shaking).² The resulting whiplash effect can cause bleeding in the brain only or both the eyes and brain. Often there is no obvious external head trauma. However, nearly all victims of SBS suffer serious health consequences such as mental retardation or developmental delays, paralysis, blindness, and seizures. Additionally, at least one out of four babies who are violently shaken die from this form of child maltreatment.

This report examines the burden of head injuries in infants and toddlers attributed to shaken baby syndrome in the Commonwealth of Virginia. The Virginia hospital discharge data (2004-2008) and the Virginia Violent Death Reporting System (2003-2007), which is managed by Virginia's Office of the Chief Medical Examiner, was used to identify SBS cases.

Hospital discharge data were coded using ICD-9-CM diagnosis codes. The validity and reliability of the data rely on coding accuracy. A hospital discharge was included in the data set if the case had an ICD-9-CM code equal to 99555. A valid E-code was not required to be included in the analysis. E-codes were missing for 36 of the 98 cases. All hospital discharge rates were calculated using population data from the National Center for Health Statistics and are per 100,000.

Case Briefs

Case One

A five-year-old girl, who was in her father's custody, became the oldest child in the house when her father re-married. Both the girl's father and the stepmother beat and shook her. On the day of her death the girl was struck forcibly in the head as punishment. It is also believed that she was shaken, though no one confessed to this action. The autopsy description of the injuries was extensive at over 1,600 words. The brain of this battered child was coated with a thick layer of blood (subdural hematoma), and there were retinal hemorrhages and diffuse brain injury. Due to the severe abuse that the child suffered, both parents were convicted in court and are serving jail time.

Case Two

A 2½ year old girl with normal development was shaken not once, but twice, on two different occasions in March and April of 2002, leaving her struggling for her life. She had to be resuscitated on both occasions after she was shaken. However, as a result of the "second shaking", she had seizures, two subdural hematomas on the left side, swelling around the brain, paralysis on the entire right side of her body and became blind. After the shaking, she could no longer function as she once had; she couldn't see anything, couldn't sit up, hold her head up, hold a cup, walk or crawl. She was incapacitated by the abuse and didn't smile, talk or show signs of the happy child she once was. After numerous therapists, neurologists, vision specialists, seizure clinics, medications and special provisions, she has slowly regained some of her functions and has begun to cope with her disabilities. To date, she has 50% of her vision and is considered legally blind. She must continue therapy to help with the paralysis, loss of vision and other handicaps.

Shaken Baby Syndrome Deaths 2003-2007

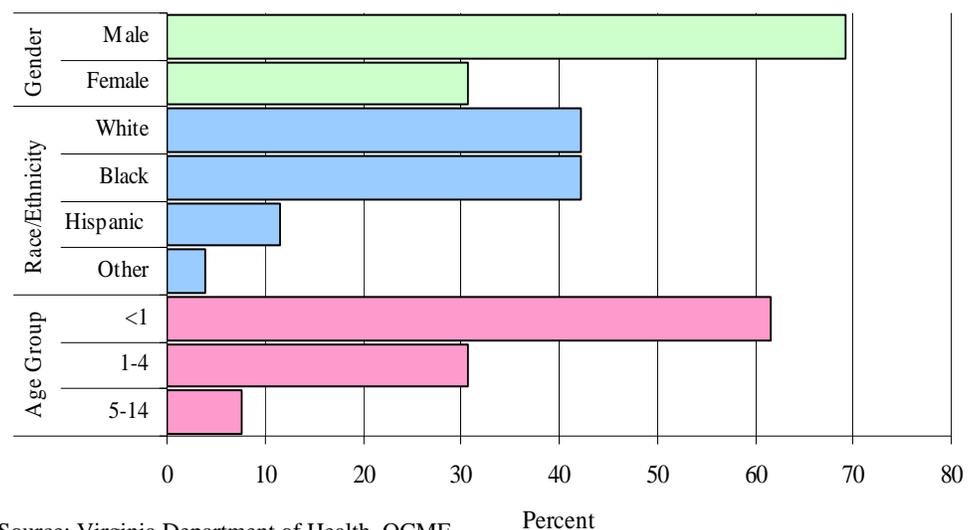
Victim Characteristics

Between 2003 and 2007, there were 26 deaths classified as shaken baby syndrome (SBS). Of these 26 deaths, four were shaken as infants and died later due to complications from their injuries; three were older than 2 years of age and died from being shaken and hit. The crude 5-year death rate for all deaths during this time period was 0.35 per 100,000 children younger than 15 years of age.

Children 4 years of age or under accounted for all but 2 deaths, for a 5-year crude death rate of 1 per 100,000 population. Children less than one year of age represented the majority of SBS cases with more than 60% of SBS deaths occurring in this age group. The crude 5-year death rate for infants under one year was 3.12 per 100,000 population.

Almost 70% of SBS victims were male. Males had a death rate two times that of females. Victims of SBS were mostly Non-Hispanic white (42%) and Non-Hispanic black (42%).

Figure 1. Demographic Characteristic of Shaken Baby Syndrome Deaths 2003-2007



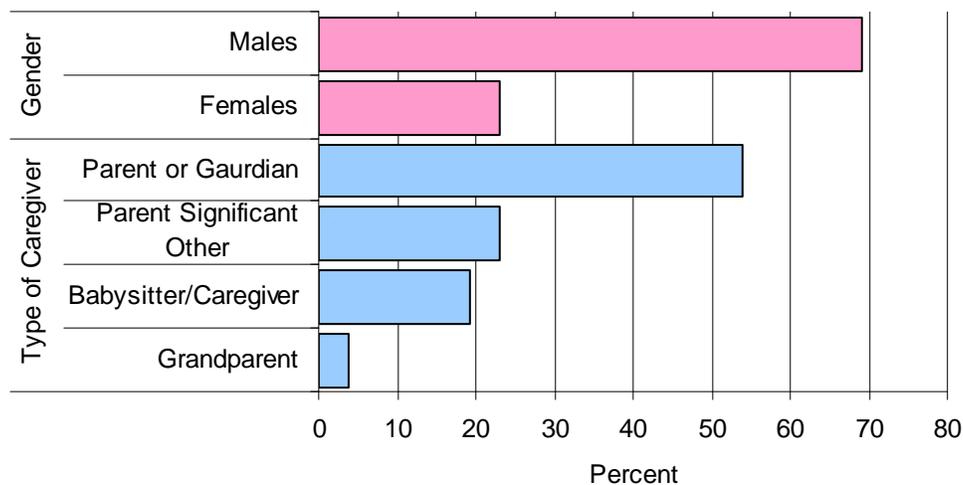
Source: Virginia Department of Health, OCME

Crude death rates were highest for non-Hispanic Black children, followed by Hispanic children and non-Hispanic whites. However the number of deaths were insufficient to produce stable rate estimates.

Perpetrator Characteristics

In 18 of the 26 cases (69%), the abuser was reported to be male. Females were identified as the abuser in 6 cases and gender was not reported for 2 cases. The child's parent/guardian was identified as the abuser in more than half of the cases. In 42% of the cases, the father was identified as the abuser. The boyfriend of the child's parent/guardian (23%), a female baby sitter (11%) and female parent (7.7%) were also commonly identified.

Figure 2. Perpetrator Demographics for SBS Deaths, 2003-2007

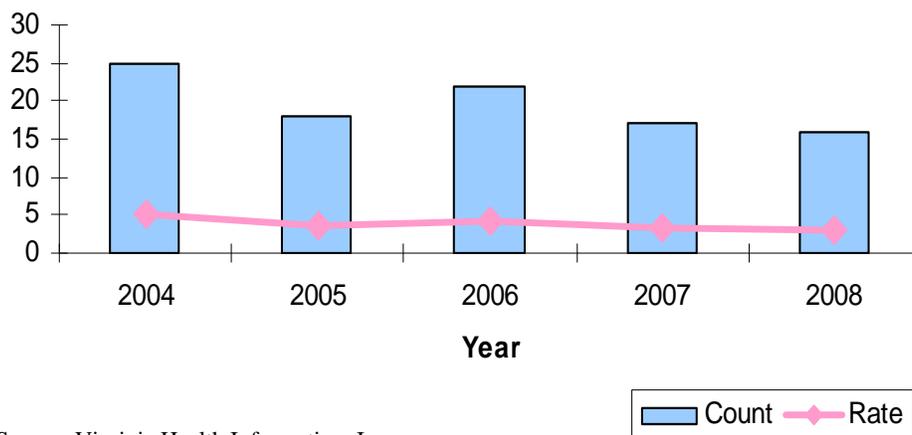


Source: Virginia Department of Health, OCME

Shaken Baby Syndrome Hospitalizations 2004-2008

Between 2004-2008, 98 children age 4 and younger were hospitalized with a diagnosis of shaken baby syndrome (SBS). The 5-year crude hospitalization rate was 3.83 per 100,000 population.

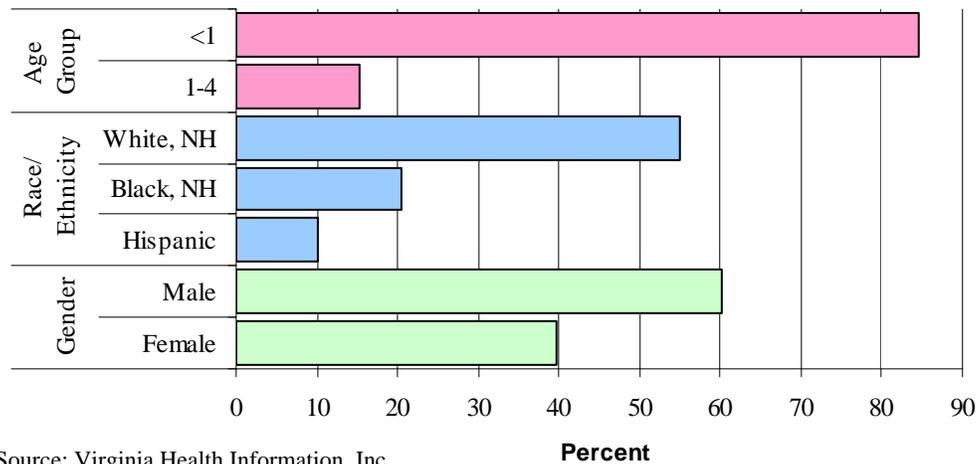
Figure 3. SBS Hospitalizations by Year, 2004-2008



Source: Virginia Health Information, Inc.

Children under the age of 1-year accounted for 84% of the SBS hospitalizations, for a 5-year crude rate of 15.9 per 100,000 population. While more than half of the children hospitalized for SBS were white, non-Hispanic, the 5-year rates for NH, whites, NH, blacks and Hispanics were comparable.

Figure 4. SBS Hospitalizations by Demographic Variables, 2004-2008



Source: Virginia Health Information, Inc.

In 63% of hospitalizations there was a valid e-code accompanying the SBS diagnosis. Of these, one-third were classified as maltreatment by the child's father or stepfather. Assault not elsewhere classifiable (NEC) or not otherwise specified (NOS) was the next most frequently reported cause of injury. Maltreatment by a non-related caregiver was listed for four cases and in two cases the child's mother or stepmother was identified as the abuser.

Table 1. SBS Hospitalizations by E-code Description, 2004-2008

E-code Description	Count	Percent
Battering/maltreatment by father or stepfather	21	33.87
Assault NEC/NOS	18	29.03
Battering/maltreatment, NOS	13	20.97
Battering/maltreatment by non-related caregiver	4	6.45
Battering/maltreatment by mother or stepmother	2	3.23
Battering/maltreatment by other relative	1	1.61
Fall from bed	1	1.61
Struck by falling object	1	1.61
Unarmed fight or brawl	1	1.61
Valid E-code Total	62	100
Missing E-code	36	36.73
TOTAL	98	100

Source: Virginia Health Information, Inc.

PREVENTION TIPS

RISK: Shaking most often results in response to a crying baby/toddler when a caregiver becomes frustrated or angry. While crying is the most common trigger for SBS, other activities such as toilet training and feeding, may also cause the person caring for the baby to become frustrated or angry.

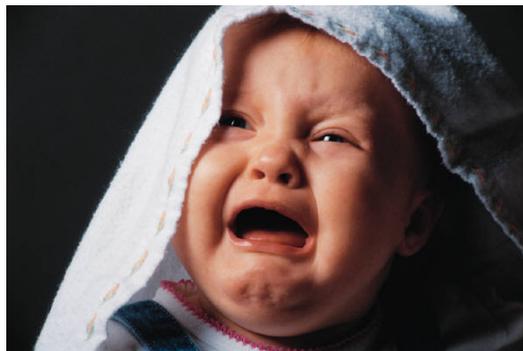
Factors that can increase a caregiver's risk for harming a child include:

- ◆ Being tired
- ◆ Limited anger management or coping skills
- ◆ Limited social support
- ◆ Low socioeconomic status
- ◆ Unrealistic expectations about child development and child-rearing
- ◆ Negative childhood experiences, including neglect or abuse
- ◆ Young parental age
- ◆ Unstable family environment
- ◆ Rigid attitudes and impulsivity
- ◆ Feelings of inadequacy
- ◆ Being a victim or witness to intimate partner violence

REMEMBER: Crying, including long bouts of inconsolable crying, is normal developmental behavior in infants. While infants usually cry to signal unmet needs, there are times when they will cry for no obvious reason.

RECOMMENDATIONS to prevent Shaken Baby Syndrome:

1. Parent's and caregivers need to understand the frustration they may feel as a result of crying in normal infants. The National Center on Shaken Baby Syndrome refers to this as the period of **PURPLE** Crying.
 - Peak Pattern**– crying peaks around 2 months and then decreases
 - Unpredictable**– crying for long periods can come and go for no reason
 - Resistant to soothing**– the baby may keep crying for long periods
 - Pain-like Look on Face**
 - Long Bouts of Crying**– crying can go on for hours
 - Evening Crying**– baby cries more in the afternoon and evening
2. Try to soothe a crying baby using methods such as skin-to-skin contact or calming white noise.
3. If the infant will not stop crying and is fed and changed, it is okay to place him or her in a safe spot, such as a crib, and leave the baby to cry while you take a break. It is more important to stay calm than it is to soothe the baby. Allow 5-10 minutes for the frustration to pass, then go back and try to soothe the baby.
4. Parents and caregivers should be encouraged to ask for help when feeling overwhelmed.



The problem is not the baby's crying; it's how caregivers respond to it. Picking up a baby and shaking, throwing, hitting, or hurting him/her is never an appropriate response.

RESOURCES

- ◆ National Center on Shaken Baby Syndrome
<http://www.dontshake.org/>
- ◆ The Shaken Baby Alliance
<http://www.shakenbaby.com/>
- ◆ Shaken Baby Syndrome
<http://www.aboutshakenbaby.com/>
- ◆ Centers for Disease Control and Prevention
<http://www.cdc.gov/concussion/HeadsUp/sbs.html>
<http://www.cdc.gov/ncipc/dvp/cmp/CMP-resources.htm>
- ◆ Shaken Baby Prevention
<http://www.sbsprevention.com/>
- ◆ Virginia Department of Social Services
http://www.dss.virginia.gov/family/cps/shaken_baby.cgi

REFERENCES

1. Centers for Disease Control and Prevention. Heads Up: Prevent Shaken Baby Syndrome. <http://www.cdc.gov/concussion/HeadsUp/sbs.html>
2. Centers for Disease Control and Prevention. Shaken Baby Syndrome Tips. http://www.cdc.gov/healthmarketing/entertainment_education/tips/shaken_baby.htm
3. The Shaken Baby Alliance. Shaken Baby Facts. <http://www.shakenbaby.com/>
4. Virginia Department of Health. Virginia Violent Death Reporting System. <http://www.vdh.state.va.us/medExam/NVDRS.htm>
5. Virginia Department of Social Services. Shaken Baby Syndrome. http://www.dss.virginia.gov/family/cps/shaken_baby.cgi

The Virginia Injury Update has been prepared by the Injury, Suicide and Violence Prevention Program, Division of Prevention and Health Promotion, Virginia Department of Health .

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Case Brief Sources:
Virginia Office of the Chief Medical Examiner
<http://www.vdh.state.va.us/medexam/>

The Shaken Baby Alliance
<http://www.shakenbaby.com/>