



**Recognition and Prevention of Pediatric Abusive Head  
Trauma:  
*Kentucky Mandatory Training***

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**Answer Sheet:**  
**Recognition and Prevention of Pediatric Abusive Head Trauma:**  
**Kentucky Mandatory Training**

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## Objectives

Upon completion of this course, the learner will be able to:

- Describe pediatric abusive head trauma.
- Discuss symptoms of abusive head trauma.
- Identify immediate and long term consequences of abusive head trauma.
- Describe the physiology of abusive head trauma.
- Identify risk factors for abusive head trauma.
- Discuss intervention strategies for prevention of abusive head trauma.

## Introduction

Pediatric abusive head trauma is a type of inflicted traumatic brain injury that happens when a baby or young child is violently shaken with or without traumatic blunt impact of the head. It has been known by many terms over the years. Beginning in the early 1970s, the term whiplash-shaken infant syndrome was used to identify the association of intracranial injuries, retinal hemorrhage and long bone fractures attributable to child abuse among infants (Dias, et al., 2005). This severe form of child abuse (NIH, 2009) has also been called shaken baby syndrome or shaken infant syndrome, shaken impact syndrome, infant shaken impact syndrome, infant whiplash-shake injury syndrome, abusive head trauma and inflicted, non-accidental or intentional head injury (Dias, et al., 2005).

Shaken infant syndrome has been the most widely used and recognized term, although shaking alone may not account for all injuries (Dias, et al., 2005). In 2009, the American Academy of Pediatrics, in a policy statement (Christian, et al., 2009), stated:

“ Shaken baby syndrome is a term often used by physicians and the public to describe abusive head trauma inflicted on infants and young children. Although the term is well known and has been used for a number of decades, advances in the understanding of the mechanisms and clinical spectrum of injury associated with abusive head trauma compel us to modify our terminology to keep pace with our understanding of pathologic mechanisms. Although shaking an infant has the potential to cause neurologic injury, blunt impact or a combination of shaking and blunt impact cause injury as well. Spinal cord injury and secondary hypoxic ischemic injury can contribute to poor outcomes of victims. The use of broad medical terminology that is inclusive of all mechanisms of injury, including shaking, is required. The American Academy of Pediatrics recommends that pediatricians develop skills in the recognition of signs and symptoms of abusive head injury, including those caused by both shaking and blunt impact, consult with pediatric subspecialists when necessary, and embrace a less mechanistic term, **abusive head trauma** (AHT), when describing an inflicted injury to the head and its contents.”



Ken Hammond, USDA

## Legal Requirement

During the 2010 Kentucky Legislative Session, 314.073 Nursing Continuing Competency requirements were amended to include a requirement for all nurses to obtain education related to pediatric abusive head trauma or "shaken baby syndrome". By mandate, the Board is requiring all *present and future* licensees to complete a *one-time training* course of at least *one and one-half (1.5) hours* covering the recognition and prevention of pediatric abusive head trauma, as defined in KRS 620.020. The one and one-half (1.5) hours required under this section shall be included in the current number of required continuing education hours. Nurses licensed before July 15, 2010 shall demonstrate completion of this course by December 31, 2013. Nurses licensed on or after July 15, 2010 must receive the education within three (3) years of their initial licensure dates.

**Access Continuing Education, Inc.** is an approved Kentucky Board for Nursing continuing education (CE) provider. Successful completion of this course will fulfill this recently added Commonwealth of Kentucky requirement.

## Kentucky Child Abuse Reporting Laws

Physicians, nurses, teachers, school personnel, social workers, coroners, child-caring personnel, dentists, EMTs, paramedics, health professionals, mental health professionals, peace officers, any organization or agency of the above who knows, or has reasonable cause to believe, that child is dependent, neglected, or abused. Abuse is defined as interfering with child's right to adequate food, shelter, clothing, education, medical care and freedom from physical, sexual, or emotional injury or exploitation or abandonment. Professionals should contact local law enforcement or Kentucky state police, commonwealth's attorney, cabinet or representative to report suspicions of child abuse and neglect, including the possibility of abusive pediatric head trauma.

## Statistics

In the United States, one of the most educated and affluent countries in the world, over three-quarters of a million children were victims of child maltreatment in 2008 (USDHHS-ACF, 2010). Child fatalities are the most tragic consequence of maltreatment. In 2008, an estimated 1,740 children ages 0 to 17 died from abuse and neglect (rate of 2.3 per 100,000 children) (CDC, 2010b). Nearly 40 percent (39.7%) of fatalities suffered from multiple forms of maltreatments. Another 30 percent (31.9%) suffered from neglect only; 22.9% of fatalities were a result of physical abuse; medical neglect resulted in 1.5% of fatalities.

According to the National Center on Shaken Baby Syndrome (NCSBS, nd), approximately 1,300 U.S. children experience severe or fatal head trauma from child abuse every year. Abusive head injuries are the most common cause of death in child abuse (Case & NCSBS, nde).

Approximately 20% of cases of AHT are fatal in the first few days after injury and the majority of the survivors are left with handicaps ranging from mild - learning disorders, behavioral changes - to moderate and severe, such as profound mental and developmental retardation, paralysis, blindness, inability to eat or existence in a permanent vegetative state (NCSBS, nd). Dias, et al. (2005) reported that 13 to 30% of pediatric AHT cases result in mortality and significant neurologic impairments occur in at least one half of the survivors.

Medical costs associated with initial and long-term care for children who are victims of AHT can range from \$300,000 to more than \$1,000,000 (NCSBS, nd). Additional costs associated with loss of societal productivity and occupational revenue and with prosecution and incarceration of a perpetrator are unknown (Dias, et al., 2005).

Parents and their partners are responsible for nearly three fourths of cases, with fathers or stepfathers (37% of cases) and boyfriends (21% of cases) accounting for the majority of cases and mothers accounting for an additional 13%. The average age of the victims is 5 to 9 months, and almost all are less than 36 months of age (Dias, et al., 2005; CDC, ndb).



Ken Hammond, USDA

In the Commonwealth of Kentucky, during State Fiscal Year 2008, 21 cases of pediatric abusive head trauma resulted in a child fatality or near fatality. In State Fiscal Year 2009, 24 cases of pediatric abusive head trauma resulted in a child fatality or near fatality (Governor's Press Release, May 27, 2010).

### **What is Abusive Head Trauma?**

Abusive head trauma (AHT) or shaken baby syndrome is a type of inflicted traumatic brain injury that is a preventable and severe form of physical child abuse (CDC, nda). The child has inflicted upon her or him, severe repetitive acceleration-deceleration forces with or without blunt impact to the head that result in a characteristic pattern of injuries (Case & NCSBS, nde). This typically occurs through the violent shaking an infant by the shoulders, arms, or legs (CDC,nda; NINDS, 2010). AHT can occur from as little as 5 seconds of shaking (NIH, 2009). AHT leads to a brain injury, which is much like an adult may sustain in repeated car crashes (CDC,ndb).

Infants are believed to be particularly susceptible to AHT because of their relatively large and heavy head, making up about 25% of their total body weight, undeveloped neck muscles, and small size

(NCSBS, nd). The infant's neck muscles are too weak to support such a disproportionately large head. Shaking the child while holding the child about the chest allows for substantial rotational shearing forces to be generated, as well as the bouncing back and forth of the brain against the skull causing a range of brain injuries (NINDS, 2010; Salehi-Had, et al., 2006). This can cause bruising of the brain (cerebral contusion), swelling, pressure, and bleeding in the brain. The large veins along the outside of the brain may tear, leading to further bleeding, swelling, and increased pressure. This can easily cause permanent brain damage or death (NIH, 2009).

The actual injury that occurs in the brain is traumatic diffuse axonal injury. This is caused by the movement of the brain within the skull in response to the acceleration-deceleration movement of the head that occurs in shaking. This abrupt rotational movement of skull results in tears of the axonal processes of nerve cells and tears to small blood vessels. Rarely are there actual tissue tears in the brain. The portions of the brain that are impacted are those beginning from the brain's surface and then moving deeper within the brain. Axonal tears are difficult to see in young children due to the small size of the axonal processes (Case, NCSBS, nde).

Reece (NCSBS, ndf) describes the trauma:

“During such assaults, the bridging veins running from the surface of the brain to the superior sagittal sinus, rupture and bleed into the subdural and/or subarachnoid spaces. Direct traumatic damage occurs to the brain; hypoxia during and after the assault causes further irreversible damage to brain tissue; and the cascade of injury continues as there is breakdown of dying brain cells that release intra-cellular enzymes, injuring adjacent neurons. The combined effect is destruction of brain tissue, leading to cerebral edema, raised intra-cranial pressure within the closed skull of the infant, decreased blood flow to the brain and a vicious circle of anoxia, cerebral edema, and death of brain tissue. These insults to the brain cause the signs, symptoms, radiologic and laboratory findings that characterize the course of this form of inflicted brain injury.”

## **Symptoms**

There are various signs and symptoms of AHT. The consequences of less severe cases may not be brought to the attention of medical professionals and may never be diagnosed. In most severe cases, which usually result in death or severe neurological consequences, the child becomes immediately unconscious and suffers rapidly escalating, life-threatening central nervous system dysfunction (NCSBS, nd).

The symptoms can vary from mild to severe. They may include (Adamsbaum, et al., 2010; Levin, 2010; Chiesa & Duhaime, 2009; NIH, 2009; NCSBS, nd; Reece & NCSBS, ndf; ):

- Decreased responsiveness
- Decreased level of consciousness, alertness, lethargy, sleepiness
- Hypotonia, or decreased muscle tone; limp arms and legs
- Rigidity or posturing
- Extreme irritability, or other changes in behavior, especially fussy, whiny, and fretful behavior, despite attempts at comforting and soothing
- Not smiling or vocalizing
- Loss of consciousness
- Loss of vision
- Seizures

- Apnea, or periods of no breathing
- Dyspnea, or difficulty breathing
- Tachypnea
- Bradycardia
- Pale or bluish skin
- Poor feeding, lack of appetite
- Poor sucking or swallowing
- Vomiting
- Head or forehead appears larger than usual or soft-spot on head appears to be bulging
- Inability to lift head
- Fixed dilated pupils, pupils of unequal responsiveness and size
- Subdural hematoma
- Coma
- Rib fractures
- Inability of eyes to focus or track movement or unequal size of pupils
- Closed head injury
- Central nervous system injury as evidenced by central nervous system hemorrhaging
- Heart may stop
- Death

The characteristic injuries of AHT are subdural hemorrhages (bleeding in the brain), retinal hemorrhages (bleeding in the retina), damage to the spinal cord and neck, and fractures of the ribs and the ends of long bones (Case & NCSBS, nd). These injuries may not be immediately noticeable. AHT injuries usually occur in children younger than 2 years old, but may be seen in children up to the age of 5 (NINDS, 2010). Babies, newborn to one year (especially babies ages 2 to 4 months), are at greatest risk of injury from shaking (CDC, ndb).

The most commonly described symptoms include: Vomiting, seizure, apnea, lethargy and poor feeding (Chiesa & Duhaime, 2009). But because these symptoms can be an indication of a range of health problems, they may not be diagnosed as AHT.

There may not be any physical signs of injury, such as bruising, bleeding, or swelling. According the National Center for Shaken Baby Syndrome (NCSBS) (nd), grab-type bruises on arms or chest are rare. In some cases, the condition can be difficult to diagnose and may not be identified during an office visit. However, rib fractures are common and can be seen on x-ray (NIH, 2009).

Retinal bleeding is very common. Indeed it is considered a cardinal manifestation of abusive head trauma by some authors (Levin, 2009; Levin, 2010). There may be retinal detachment, which is a separation of the retina (the light-sensitive membrane in the back of the eye) from its supporting layers. Documented incidence of retinal hemorrhages in abusive head injury cases has ranged from 35-100%, more typically a rate of about 80% (Chiesa & Duhaime, 2009). There are, however, other factors must be considered (NIH, 2009) since other causes of bleeding behind the eye should be ruled out before diagnosing shaken baby syndrome. Retinal hemorrhages are a very rare occurrence after cardiopulmonary resuscitation and are typically minor when compared to child abuse cases (Chiesa & Duhaime, 2009).

## Consequences of Abusive Head Trauma

As stated previously, the symptoms of AHT can vary from mild to death depending on the specific injury that is sustained by the child. Some of the consequences of AHT include the following (NCSBS, nd):

- Irreversible brain damage
- Learning disabilities
- Physical disabilities
- Retinal hemorrhage, visual disabilities, blindness, eye damage
- Hearing impairment, hearing loss
- Speech disabilities
- Cerebral palsy
- Spinal cord injury
- Paralysis
- Seizures
- Behavior disorders
- Cognitive impairment
- Death

In comparison with accidental traumatic brain injury in infants, those with AHT injuries have a much worse prognosis. Damage to the retina of the eye can cause blindness. The majority of infants who survive severe shaking will have some form of neurological or mental disability, such as cerebral palsy or mental retardation, which may not be fully apparent before 6 years of age (NINDS, 2010).

Hymel, et al. (2007) compared subjects with noninflicted head trauma with subjects with inflicted head trauma and reported that those with inflicted head trauma had:

- More frequently experienced noncontact injury mechanisms,
- Sustained greater injury depth,
- More frequently manifested acute cardiorespiratory compromise,
- Had lower initial Glasgow Coma Scale scores,
- Experienced more frequent and prolonged impairments of consciousness,
- More frequently demonstrated bilateral, hypoxic-ischemic brain injury,
- Had lower mental developmental index scores 6 months postinjury, and
- Had lower gross motor quotient scores 6 months postinjury.

Clearly, many of the long term consequences have a profound impact on the child as well as on families, communities and societies. The severe disabilities that AHT can cause require multiple supportive services from multiple sources. Many children require long-term medical services, physical, occupational, speech, and educational therapies, and lifelong custodial care (NINDS, 2010; Dias, et al., 2005). Social and educational services are also needed.

As stated previously, the medical costs associated with initial and long-term care for children who are victims of AHT can be very high. Additional costs associated with loss of societal productivity and occupational revenue and with prosecution and incarceration of a perpetrator are unknown (Dias, et al., 2005).

## **How Does AHT happen?**

In most cases, an angry or frustrated parent or caregiver shakes the baby to punish or quiet the child. Such shaking usually takes place when the infant is crying inconsolably and the frustrated caregiver loses control. Many times the caregiver did not intend to harm the baby. Still, it is a form of child abuse (NIH, 2009).

Injuries are most likely to happen when the baby is shaken and then the baby's head hits something. Even hitting a soft object, such as a mattress or pillow, may be enough to injure newborns and small infants. Such injuries can occur because infants' brains are softer, their neck muscles and ligaments are weak, and their heads are large and heavy in proportion to their bodies (NIH, 2009).

In addition to inconsolable crying, other triggering events include toilet training difficulties and feeding problems (NCSBS, nd).

AHT does not result from gentle bouncing, playful swinging or tossing the child in the air, or jogging with the child. It also is very unlikely to occur from accidents such as falling off chairs or down stairs, or accidentally being dropped from a caregiver's arms. Short falls may cause other types of head injuries, although these are often minor (NIH, 2009). It is estimated that the incidence of death from a short fall (<4 feet) is probably at most 1 in a million. When this does occur, the brain injuries tend to be recognizable as contact injuries and different from those seen in fatal abusive head trauma (Case & NCSBS, nd).

Episodes of shaking can occur chronically. In one study (Adamsbaum, et al, 2010), 55% of perpetrators repeated violent shaking episodes, on a daily basis over several weeks or months. The estimated number of episodes ranged from 10 to 30 episodes of shaking. Perpetrators cited repetitive shaking as an effective means of getting the child to go to sleep (62.5%). Exhaustion may be considered an immediate symptom and a result of hypoxic-ischemic injuries in some of the children (Adamsbaum, et al., 2010).

## **Risk Factors for Abusive Head Trauma**

### Factors that Put an Infant at Risk

The following factors increase an infant's risk of being a victim of abusive head trauma, particularly when combined with a parent or caregiver who's not prepared to cope with caring for a baby (CDC,nda; CDC, ndb):

- Being less than 1 year of age, particularly less than 6 months of age
- Babies less than 1 year of age are at the greatest risk, but AHT has been reported in children up to 5 years of age
- Babies (especially babies ages 2 to 4 months) are particularly at risk of injury from shaking, because they are small in relation to the size of adults who may pick them up and shake them, and they tend to cry more frequently and longer than older babies.
- Infant prematurity or disability
- Being one of a multiple birth
- Inconsolable and/or frequent crying
- Prior physical abuse or prior shaking, and
- Most AHT victims are male
- A history of previous child abuse.

### Factors that Can Increase Risk for Harming an Infant

Most AHT perpetrators are parents and their partners, with the majority of the perpetrators being the male parent or partner. The following factors increase a parent's or caregiver's risk of shaking a baby, particularly when combined with not being prepared to cope with caring for a baby (CDC, nda; CDC, ndb):

- Frustration or anger resulting from an infant's crying
- Being tired
- Having limited anger management or coping skills
- Limited social support
- Young parental age
- Unstable family environment
- Low socioeconomic status
- Unrealistic expectations about child development and child-rearing
- Rigid attitudes and impulsivity
- Feelings of inadequacy, isolation, or depression
- Being a victim or witness to intimate partner violence
- Negative childhood experiences, including neglect or abuse
- Being a single parent.

### **Identification of AHT**

It can be a difficult process to determine if a child's injuries are due to physical abuse (Chiesa & Duhaime, 2009; Adamsbaum, et al., 2010), especially because perpetrators do not necessarily admit to shaking, or otherwise injuring a child.

Child abuse of any kind is often suspected by healthcare providers when the caretaker report of what happened to the child varies greatly from the physical findings on examination or when the healthcare provider suspects that the child's injuries could not have occurred as reported because of the child's developmental age. Frequently caretakers report that the child was fine, but awoke from sleep with symptoms as described previously, with no symptoms prior to the nap. Other caretakers report that the child sustained the impact injury from a fall, such as from a couch, changing table or a bed.

Caretakers have confessed to having shaken the child, but this is not typical.

There is debate in the literature regarding the diagnosis of AHT. Some of the issues include (Christian, et al., 2009):

- Social issues such as removal of children from the home by Child Protective Services (CPS).
- Legal issues such as arrest and incarceration of perpetrators of AHT and loss of parental rights.
- Injuries in accidental and AHT overlap.
- The AHT is rarely witnessed.
- Accurate history of the trauma is not often given by the perpetrator.
- There is no definitive test to determine the accuracy of the diagnosis.

Additionally, the literature contains multiple references to other health conditions that can have similar presentations as AHT. These include: birth and other accidental trauma, congenital malformations, genetic and metabolic conditions, hematologic disorders, infectious diseases, toxins, complications of

surgical intervention, vasculitides, oncologic processes and nutritional deficiencies (Chiesa & Duhaime, 2009).

AHT occurs most frequently and with most fatalities in children under 2 years old, however, providers should consider intentional shaking as a mechanism of injury in the evaluation of abusive head injury in older children (Salehi-Had, 2006).

Most of the fatalities that occur as a result of child abuse and neglect are to children who have been victims of AHT. Younger children, under 2 years of age, as stated previously are at greatest risk for AHT. This is evidenced by the number of children, in 2008, when an estimated 1,740 children ages 0 to 17 died from all forms of abuse and neglect, not just AHT (CDC, 2010b):

- **80 percent of deaths occurred among children younger than age 4;**
- 10 percent among 4-7 year-olds;
- 4 percent among 8-11 year-olds;
- 4 percent among 12-15 year-olds; and
- 2 percent among 16-17 year-olds.

Once the child is stabilized, a careful and well-documented history, as always, is the most critical element of the medical evaluation. Using quotes whenever possible, the pediatrician should document descriptions of the mechanisms of injury or injuries, onset and progression of symptoms, and the child's developmental capabilities. The physical examination should include detailed documentation, either by body diagrams and/or photographs, of any concerning cutaneous findings and should include a thorough search for other signs that may suggest a nontraumatic cause. If the child is verbal, it may be helpful to gather parental and patient histories separately. If abuse is a concern after this preliminary evaluation, consultation with a child abuse pediatrician, pediatric specialist, or pediatrician experienced in this area, if available, may be helpful in determining the best way to proceed with assessment (Kellogg, et al., 2007).

Once the clinician has assessed all the injuries, including approximate ages of injuries (when possible), a careful, complete, and detailed history should be obtained from the caregivers (Kellogg, et al, 2007).

Explanations that should alert the healthcare provider for the possibility of intentional trauma include (Kellogg, et al., 2007):

- No explanation or vague explanation for a significant injury;
- An important detail of the explanation changes dramatically;
- An explanation that is inconsistent with the pattern, age, or severity of the injury or injuries;
- An explanation that is inconsistent with the child's physical and/or developmental capabilities; and
- Different witnesses provide markedly different explanations for the injury or injuries.

Information regarding the child's behavior before, during, and after the injury occurred, including feeding times and levels of responsiveness, should be gathered.

Chiesa & Duhaime (2009) suggest careful assessment while obtaining a comprehensive history of the presenting illness. This includes:

- Details about the timeline of the exact events leading up to the present, including a detailed description of events before and after the child became symptomatic.
- The timeline of symptom development and escalation is also carefully obtained.

- What was the trauma, exactly what happened? What position was the child in? How did the child land? What the fall height was. How the child acted immediately afterwards? What did caretakers do?
- How has cared for the child? What is the relationship between caretakers and the child
- What is the child's birth/past medical history, including prior trauma?
- What is the family's medical history? Is there an history of bleeding disorders?
- It is best to ask open-ended questions to obtain specific answers, such as "What happened next? Or "What did you do then?" This is preferable over leading the person providing information. One does not want to suggest whether specific actions might have occurred.
- Identify any trigger for the abuse by the caretaker. Crying is often identified as a trigger.

Jenny (NCSBS, nd) reported on a study of AHT in children under 3 years of age who were evaluated at a Childrens Hospital from 1990 to 1995. Thirty-one percent of the children had previously been seen by a physician who did not recognize the AHT. Many of the children whose head injuries were missed were seen by doctors on multiple occasions after their injuries. For children whose head trauma was missed, the average length of time to diagnosis head trauma from the day of the first doctor visit was 7 days. When missed cases were compared to recognized cases, several factors were found to be significantly different.

Children with missed abusive head trauma were much younger than those in whom the diagnosis was recognized on the first physician visit. The mean age of the missed cases at the time of their first medical visit for head injury symptoms was 180 days. The mean age of the recognized cases was 278 days.

Abusive head trauma was missed significantly more often in children who were Caucasian than in children of minority races, and was more likely missed in families where both parents lived with the child. Not surprisingly, the severely injured children were more likely to be recognized as having head trauma at their first visit to the physician. At the first visit, children who were comatose, whose breathing was compromised, who were seizing or who had facial bruising were more likely to be accurately diagnosed.

Wood, et al. (2010) studied race and socioeconomic status and AHT. That research suggests that there is a bias in the evaluation of AHT, with African-American or publicly insured or uninsured patients receiving an overevaluation of AHT and Caucasian or privately insured patients being underevaluated for AHT. This is in direct conflict with the racial breakdown of abuse victims. In 2008, when an estimated 1,740 children ages 0 to 17 died from any cause of abuse and neglect (not just AHT) (CDC, 2010b):

- 39% of deaths were non-Hispanic White children.
- 30% of deaths were African-American children.
- 16% of deaths were Hispanic children.

### **Treatment**

Emergency treatment for a child who has been shaken usually includes life-sustaining measures such as respiratory support and surgery to stop internal bleeding and bleeding in the brain. Diagnostic brain scans, such as magnetic resonance imaging (MRI) and computerized tomography (CT), may be needed to make a more definite diagnosis (NINDS, 2010).

As with all patients, a severely injured child must be stabilized before further evaluation is undertaken. This initial evaluation may encompass a trauma response team and pediatric specialists in surgery,

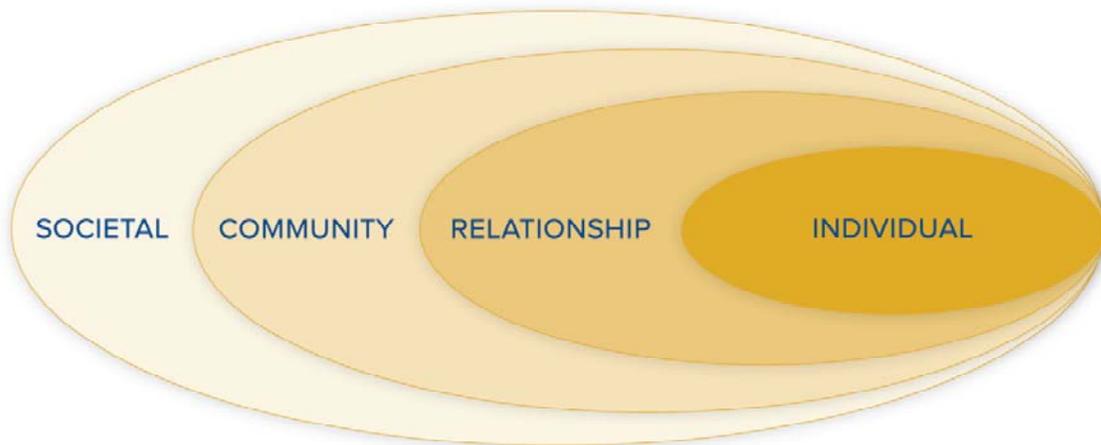
emergency medicine, and critical care. Careful documentation may not be possible initially and must always be secondary to resuscitation and stabilization of the patient (Kellogg, et al., 2007).

## **Prevention**

### Comprehensive Prevention Model

The CDC's (nda) *Preventing Shaken Baby Syndrome: A Guide for Health Departments and Community-Based Organizations* A part of CDC's "Heads Up" Series, provides a model for the prevention of AHT.

Prevention requires understanding the factors that influence violence. CDC uses a four-level social-ecological model to better understand violence and the effect of potential prevention strategies. This model considers the complex interplay between individual, relationship, community, and societal factors and is more likely to sustain prevention efforts over time than any single intervention.



[http://www.cdc.gov/Concussion/pdf/Preventing\\_SBS\\_508-a.pdf](http://www.cdc.gov/Concussion/pdf/Preventing_SBS_508-a.pdf)

**Individual level strategies** – These are the interventions that are aimed at parents and caretakers of infants and children, and changing their knowledge and skills.

**Relationship level strategies** – These are interventions that are aimed at trying to change the interactions between people: parents and children, parents and other caregivers, parents and healthcare providers, bystanders and parents.

**Community level strategies** – These are strategies that are aimed at modifying the characteristics of settings that give rise to violence or that protect against violence.

**Societal level strategies** – These are aimed at changing cultural norms surrounding parenting, as well as laws and policies that support parents.

### Individual Strategies: Public Health Intervention

Primary prevention public health strategies have been utilized with success in the past with AHT, as well as other conditions, for example HIV/AIDS. Primary prevention programs need to reach a large number of persons; it is important that they be inexpensive and easy to administer. A simple program

containing a powerful message, administered at the appropriate moment and requiring very little effort or time on the part of those who deliver the message and those who receive it, has the greatest chance of success (Dias, et al., 2005).

AHT occurs most frequently in response to a crying infant (CDC, nda). Crying—including long bouts of inconsolable crying—is normal developmental behavior in infants. The problem is not the crying, it's how caregivers respond to it. Picking up a baby and shaking, throwing, hitting, or hurting him or her is never an appropriate response. Everyone, from caregivers to bystanders, can do something to prevent AHT. Giving parents and caregivers tools that can help them cope if they find themselves becoming frustrated while caring for a baby are important components of any AHT prevention program

The National Center on Shaken Baby Syndrome (NCSBS) has developed **The Period of PURPLE Crying** as a public health intervention. The purpose is to educate parents about the normalcy of infant crying and the dangers of shaking an infant.

The acronym PURPLE describe specific characteristics of an infant's crying during this phase of life and lets parents and caregivers know that what they are experiencing is indeed normal and, although frustrating, is simply a phase in their child's development that will pass. The word period is important because it tells parents that it is only temporary and will come to and end.

**P=Peak of Crying**

Your baby may cry more each week; the most at 2 months, then less at 3-5 months.

**U=Unexpected**

Crying can come and go and you don't know why.

**R=Resists Soothing**

Your baby may not stop crying no matter what you try.

**P=Pain-like Face**

A crying baby may look like she or he is in pain even when they are not.

**L=Long Lasting**

Crying can last as much as 5 hours per day, or more.

**E=Evening**

Your baby may cry more in the late afternoon or evening.

For more information on this particular public health strategy, go to <http://purplecrying.info/>.

The CDC (nda) offers the following:

#### **Prevention Tips for Parents and Caregivers**

- Babies cry a lot in the first few months of life and this can be frustrating, but it will get better.
- Remember, you are **not** a bad parent or caregiver if your baby continues to cry after you have done all you can to calm him or her.
- You can try to calm your crying baby by:
  - Rubbing his or her back,
  - Gently rocking,
  - offering a pacifier,
  - singing or talking, or
  - Taking a walk using a stroller or a drive with the baby in a properly-secured car seat.
- If you have tried various ways to calm your baby and he or she won't stop crying, do the following:
  - Check for signs of illness or discomfort like diaper rash, teething, or tight clothing.
  - Call the doctor if you suspect your child is ill.
  - Assess whether he/she is hungry or needs to be burped.
- If you find yourself pushed to the limit by a crying baby, you may need to focus on calming yourself. Put your baby in a crib on his or her back, make sure he or she is safe, and then walk away for a bit and call a friend, relative, neighbor, or parent helpline for support. Check on him or her every 5 to 10 minutes.
- Tell everyone who cares for your baby about the dangers of shaking a baby and what to do if they become angry, frustrated, or upset when your baby has an episode of inconsolable crying or does other things that caregivers may find annoying, such as interrupting television, video games, sleep time, etc.
- Be aware of signs of frustration and anger among others caring for your baby. let them know that crying is normal and that it will get better.
- Do not leave your baby in the care of someone you know has anger management issues.
- See a health care professional if you have anger management or other behavioral concerns.
- Understand that you may not be able to calm your baby and that it is not your fault, nor your baby's. It is normal for healthy babies to cry much more in the first 4 months of life.

The National Institutes of Health (2009) have the following message:

- **NEVER** shake a baby or child in play or in anger. Even gentle shaking can become violent shaking when you are angry.
- Do not hold your baby during an argument.
- If you find yourself becoming annoyed or angry with your baby, put him in the crib and leave the room. Try to calm down. Call someone for support.
- Call a friend or relative to come and stay with the child if you feel out of control.
- Contact a local crisis hotline or child abuse hotline for help and guidance.
- Seek the help of a counselor and attend parenting classes.
- Do not ignore the signs if you suspect child abuse in your home or in the home of someone you know.

The American Association of Pediatrics (2010) message:

If you feel as if you might lose control when caring for your baby:

- Take a deep breath and count to ten.
- Put your baby in her crib or another safe place, leave the room, and let her cry alone.
- Call a friend or relative for emotional support.
- Give your pediatrician a call. Perhaps there's a medical reason why your baby is crying.

The CDC (nda) offers the following:

#### **Example Messages for Health Care Providers**

- Remind parents and caregivers that crying is normal for babies.
  - Explain to parents that excessive crying is a normal phase of infant development.
  - Share the “Crying Curve” information with parents: Infant crying begins to increase around 2 to 3 weeks of age, and peaks around 6 to 8 weeks of age; it then tapers off when the baby is 3 to 4 months old.
- Support parents and other caregivers of babies.
  - During routine pediatric visits, be sure to ask parents how they are coping with parenthood and their feelings of stress.
  - Assure them that it is normal to feel frustrated at long bouts of crying and a sudden decrease in sleep, but that things will get better.
  - Give parents the number to a local helpline or other resource for help.
  - Talk with them about the steps they can take when feeling frustrated with a crying baby, such as putting the baby safely in a crib on his or her back, making sure that he or she is safe, walking away and calling for help or a friend, while checking on the baby every 5 to 10 minutes.
  - Let parents know what to check for when their baby is crying: signs of illness, fever or other behavior that is unusual, or discomfort like a dirty diaper, diaper rash, teething, or tight clothing, or whether he or she is hungry or needs to be burped.

#### Protective Factors for Child Abuse and Maltreatment

Child abuse prevention programs have long focused on reducing particular risk factors. However, increasingly, prevention services are also recognizing the importance of promoting protective factors: conditions in families and communities that research has shown to increase the health and well-being of children and families. These factors help parents who might otherwise be at risk of abusing or neglecting their children to find resources, supports, or coping strategies that allow them to parent effectively, even under stress (CWIG, 2008).

### ***Parental/Family Protective Factors***

**Resilience** is a concept that has been identified as an important protective factor among children who have been abused or maltreated. Research has identified that resilience was found to be related to personal characteristics of the child that can be protective against child abuse and maltreatment. Resilience is also a protective factor for parents. Parents who are emotionally resilient have a positive attitude, creatively problem solve, effectively address challenges, and are less likely to direct anger and frustration at their children (CWIG, 2008). These parents have:

- Secure attachment with children; positive and warm parent-child relationship
- Supportive family environment
- Come to terms with own history of abuse
- Household rules/structure; parental monitoring of child
- Extended family support and involvement, including caregiving help
- Stable relationship with parents
- A model of competence and good coping skills
- Family expectations of pro-social behavior
- High parental education

### ***Community Protective Factors***

- Mid to high socioeconomic status
- Access to health care and social services
- Consistent parental employment
- Adequate housing
- Family religious faith participation
- Good schools
- Supportive adults outside of family who serve as role models/mentors to child

### ***Societal Protective Factors***

- Families with two married parents encounter more stable home environments, fewer years in poverty, and diminished material hardship
- Supportive institutions in the society such as good child care and healthcare

### **Conclusion**

Abusive Head Injury is a serious, sometimes fatal consequence of child abuse. The Commonwealth of Kentucky has undertaken measures to insure that select professionals, including licensed healthcare providers, have the basic information they need to consider the possibility that such an injury has occurred.

The law mandates the following professionals as subject to this new training requirement:

- Urgent treatment or urgent care centers.
- Physician assistants.
- Emergency medical technicians.
- Paramedics.
- Advanced registered nurse practitioners.
- Licensed and certified social workers.
- Law enforcement in basic training courses.
- Law enforcement professional development courses.

- Inmates in correctional settings.
- Foster parents who care for children younger than 5.
- Licensed child care centers.
- Certified family child care homes.
- Staff working in the Health Access Nurturing Development Services (HANDS) program (a voluntary statewide home visitation program for first-time parents).

Those who are encouraged to receive training and awareness on the prevention of pediatric abusive head trauma include:

- DCBS for front-line child protection staff (currently provided).
- Kentucky high schools during students' last year.
- Local jails.

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## Test

**\*If you have downloaded the course off the Internet and wish to submit your test online you must return to our website ([www.accesscontinuingeducation.com](http://www.accesscontinuingeducation.com)) to do so.**

1. All the following are true about Pediatric abusive head trauma **EXCEPT**:
  - A. A type of accidental traumatic brain injury.
  - B. A type of inflicted traumatic brain injury.
  - C. Occurs when a baby or young child is violently shaken.
  - D. Occurs with or without traumatic blunt impact of the head.
  
2. Depending on the severity of the brain injury, symptoms of AHT can vary from mild to death.
  - A. True.
  - B. False.
  
3. Frequently symptoms of AHT present as: Vomiting, seizure, apnea, lethargy, poor feeding, retinal hemorrhage, often with rib fractures:
  - A. True.
  - B. False.
  
4. The characteristic injuries of AHT are:
  - A. Subdural hemorrhage, vomiting and coma.
  - B. Subdural hemorrhage, retinal hemorrhage, damage to the spinal cord and neck, and fractures of the ribs and the ends of long bones.
  - C. Retinal hemorrhage, inconsolable crying, and bruises to face, head and upper chest.
  - D. None of the above.

5. Long-term consequences of AHT can be devastating, and vary based on the extent of the specific brain injury. Possible outcomes include all the following **EXCEPT**:

- A. Learning disabilities, blindness, coma, death.
- B. Speech difficulties and paralysis.
- C. Behavior disorders, learning disabilities, persistent vegetative state
- D. None of the above.

6. Children who are victims of AHT experience specific injuries as a result of the following:

- A. The relatively large head in relation to body size and the undeveloped neck muscles that cannot support the head.
- B. Movement of the brain within the skull, including rotational shearing forces and rapid acceleration and deceleration of the brain.
- C. Tears to the axonal processes of nerve cells and tears to small blood vessels.
- D. All of the above.

7. Characteristics that put an infant at risk for AHT include:

- A. Being 5 years of age or older.
- B. Being less than 6 months in age, one of multiple births, having a disability and prematurity.
- C. Having limited anger management skills.
- D. All of the above.

8. Characteristics that put an adult at risk for harming an infant include:

- A. Being the male partner of the mother (either the father of the child or the mother's boyfriend).
- B. Having limited coping skills and limited anger management skills.
- C. Having unrealistic expectations of child development and child-rearing.
- D. All of the above.

9. Inconsolable crying is the most common precipitant for AHT.

A. True.

B. False.

10. AHT prevention efforts include educational programs such as the National Center on Shaken Baby Syndrome's **The Period of Purple Crying**, and laws like the one in Kentucky that requires training for both professionals and non-professionals (such as high-school seniors and prison populations).

A. True.

B. False.