

Handout 2.3: Abusive Head Trauma (Shaken Baby Syndrome)

Abusive head trauma/inflicted traumatic brain injury or AHT (also called shaken baby/shaken impact syndrome or SBS) is a form of inflicted head trauma.

AHT can be caused by direct blows to the head, dropping or throwing a child, or shaking a child. Head trauma is the leading cause of death in child abuse cases in the United States.

How These Injuries Happen

Unlike other forms of inflicted head trauma, abusive head trauma results from injuries caused by someone vigorously shaking a child. Because the anatomy of infants puts them at particular risk for injury from this kind of action, the vast majority of victims are infants younger than 1 year old. The average age of victims is between 3 and 8 months, although these injuries are occasionally seen in children up to 4 years old.

The perpetrators in these cases are most often parents or caregivers. Common triggers are frustration or stress when the child is crying. Unfortunately, the shaking may have the desired effect: although at first the baby cries more, he or she may stop crying as the brain is damaged.

When someone forcefully shakes a baby, the child's head rotates about the neck uncontrollably because infants' neck muscles aren't well developed and provide little support for their heads. This violent movement pitches the infant's brain back and forth within the skull, sometimes rupturing blood vessels and nerves throughout the brain and tearing the brain tissue. The brain may strike the inside of the skull, causing bruising and bleeding to the brain.

The damage can be even greater when a shaking episode ends with an impact (e.g., hitting a wall or a crib mattress), because the forces of acceleration and deceleration associated with an impact are so strong. After the shaking, swelling in the brain can cause enormous pressure within the skull, compressing blood vessels and increasing overall injury to its delicate structure.

Normal interaction with a child, like bouncing the baby on a knee, will **not** cause these injuries, although it's important to **never** shake a baby under **any** circumstances because gentle shaking can rapidly escalate.

What Are the Effects?

AHT often causes irreversible damage. In the worst cases, children die due to their injuries.

Children who survive may have:

- Partial or total blindness.
- Hearing loss.
- Seizures.
- Developmental delays.
- Impaired intellect.
- Speech and learning difficulties.
- Problems with memory and attention.
- Severe mental retardation.
- Cerebral palsy.

Even in milder cases, in which babies look normal immediately after the shaking, they may eventually develop one or more of these problems. Sometimes the first sign of a problem isn't noticed until the child enters the school system and exhibits behavioural problems or learning difficulties. But by that time, it's more difficult to link these problems to a shaking incident from several years before.

Signs and Symptoms

In any abusive head trauma case, the duration and force of the shaking, the number of episodes and whether impact is involved all affect the severity of the infant's injuries. In the most violent cases, children may arrive at the emergency room unconscious, suffering seizures or in shock. But in many cases, infants may *never* be brought to medical attention if they don't exhibit such severe symptoms.

In less severe cases, a child who has been shaken may experience:

- Lethargy
- Irritability
- Vomiting
- Poor sucking or swallowing
- Decreased appetite
- Lack of smiling or vocalizing
- Rigidity
- Seizures
- Difficulty breathing
- Altered consciousness
- Unequal pupil size
- An inability to lift the head
- An inability to focus the eyes or track movement

Unfortunately, unless a doctor has reason to suspect child abuse, mild cases (in which the infant seems lethargic, fussy, or perhaps isn't feeding well) are often misdiagnosed as a viral illness or colic. Without a diagnosis of child abuse and any resulting intervention with the parents or caregivers, these children may be shaken again, worsening any brain injury or damage.

If shaken baby syndrome *is* suspected, health workers may look for:

- Hemorrhages in the retinas of the eyes.
- Skull fractures.
- Swelling of the brain.
- Subdural hematomas (blood collections pressing on the surface of the brain).
- Rib and long bone (bones in the arms and legs) fractures.
- Bruises around the head, neck or chest.