

## **Descriptors of specific head injury patterns often associated with SBS or non-accidental head trauma**

Non-accidental traumatic brain injury (Shaken Baby Syndrome) results in bleeding inside the skull. There are different types of tissue that hemorrhage or bleed inside the brain and cranium. The clinical presentation of the injured child is dependant on and determined by the part of the child's brain or area(s) of lining that is/are bleeding; such as epidural hematomas or hemorrhage, subdural hematomas and intracerebral hematomas that may be present. The location of bleeding determines the type of symptoms a child may experience.

**Epidural hematomas** and bleeding are most likely related to arterial bleeds and may lead to the rapid demise of a child's condition if not surgically corrected in a timely manner. The hemorrhaging causes the child's brain to shift or may cause herniation of the child's brain and brainstem through the foramen magnum at the bottom of the skull. Both conditions, if allowed to persist and progress, may cause death. Epidural and subdural hematomas are often times are associated with skull fractures.

**Subdural hematomas** may be acute (< 48 hours) or chronic (> 48 hours to 2 weeks). The subdural bleeding originates from the meningeal and cerebral venous network. The blood may accumulate rapidly or slowly depending on the pathology of the injury and child's co-morbidities. Subdural hematomas may or may not result in brain shift and/or brainstem herniation. The medical management of these hematomas varies depending on the clinical features of the injured child. Subdural hematomas of varying age are evidence that more than one instance of non-accidental head injury has occurred in the child's life. It is not uncommon to find that acute injuries are accompanied by older injuries that are discovered during investigation into the most recent episode of abuse. The pathophysiology behind subdural hematomas is different and can be insidious, and therefore may be undiscovered until a more serious injury occurs.

**Intracerebral hematomas** are caused by forces that penetrate the cerebral tissues and they may be associated with open or closed head injuries. Generally associated with contusions, these types of hematomas may be found deep within the child's brain. If the intracerebral hematoma is an expanding mass, increased intracranial pressure may result. High intracranial pressure may cause compression of adjacent brain tissue interfering with the delivery of blood and oxygen to the cells.