

## Visit Topic Suggestions

### **Brain Development**

To show a visual of the brain and how the brain works refer to the DVD Traumatic Brain Injuries in Early Childhood: Recognizing, Recovering, Supporting Chapter 1 titled Typical Development and Basic Brain Anatomy. Give the parents/caregivers/guardians the **“Brain Development and Traumatic Brain Injuries (TBI)”** handout.

One of the best descriptions of the development of the brain in early childhood can be found in a book written by Dr. Jill Stamm, Ph.D. “The Simple, Science-Backed Way to Nurture Your Child’s Developing Mind from Birth to Age 3 Bright from the Start.” In her book, she describes the development of the brain:

“The brain develops from back to front, from inside out and from bottom up at the same time.

From Back to Front: The parts of the brain are responsible for vision wire up early and are located in the back part of the brain (known as the occipital lobe). The visual system of a six-to eight month old is pretty much like that of an adult.

Coming forward in the brain, the hearing system wires up quickly as well. The areas above ones ears (the temporal lobes) are important early in life but have a wider window of opportunity for development than the visual areas, staying quite changeable and receptive to learning the sounds of new language for the first few years of life.

Next, moving forward into the motor and speech areas of the brain is an area of language production. We know that children are capable of hearing and understanding language and word meanings far earlier than they can speak or express their thoughts. As children grow in the first year of life and gain practice in making sounds and babbling, the connections in the motor areas become more established and babies gain better control over the muscles in their mouth and tongue.

Finally, all the way forward in the brain, behind ones forehead, this regions is responsible for skills such as planning, abstract reasoning, and are called the frontal lobes, which are not fully developed until high school and beyond. This provides some insight into why toddlers do not understand why they should not touch a hot stove, school age children have trouble with logic, and even high school teens, which parents expect to “know better,” do not always make good decisions. Their brains are not fully developed yet to prioritize or to necessarily understand the consequences of their actions.

From Inside Out: Central structures of the brain (part of the limbic system) that process and regulate our emotions develop before the outer part (the cortex). These central structures, which “tag” incoming information with an emotional importance, are mostly formed in the first few years of life. The degree to which they form in a healthy way will influence the strength and quality of connections to the outer cortex, which controls the processing of incoming information for thinking and planning, for sensory processing, and for memory storage-basically the kind of brain work that is used in school learning. In other words, how the brain is wired to process

## Visit Topic Suggestions Continued

emotions in the earliest years directly sets the stage for how the child functions later in a formal academic setting.

From the Bottom Up: The parts of the brain responsible for the basic functions, such as heartbeat, breathing, and temperature control develop early and are located in the brain stem regions. By contrast, the abilities to maintain focus of your attention, control your emotions, and coordinate fine motor movements develop later as the outer cortex wires up.”

*It is important for parents to understand how the brain develops and how the brain is rapidly changing in the first few years of life. These are formative years and how the brain develops; its foundational networks can be profoundly affected by injuries to the brain. It is essential to protect the brain during this time of development.*

### **Causes of Traumatic Brain Injury/ Home Safety**

Discuss with the parent the content found in “**FACTS about Traumatic Brain Injury (TBI) in Children**” handout. Give the parents/caregivers/guardians the two handouts “**Some Causes of Traumatic Brain Injuries (TBI)**”. Research done by the Centers for Disease Control (CDC) found that babies’ ages 2 to 4 months of age are likely to sustain brain injury from being shaken. This type of injury is also called Shaken Baby Syndrome. When an infant is shaken the brain rocks back and forth. The motion causes the axons to tear in addition to the brain hitting the bony structure of the skull. As the child begins to move he/she is at greater risk for falls/ rolling off beds/striking their heads on objects or being struck by objects. Not wearing a seatbelt or riding in an improper car seat is another cause for TBI. Asking parents about their observations about their child’s motor skills and discussing potential areas in which their child may be exposed to injuries to the brain will increase awareness of the causes and will hopefully reduce the potential for injuries to the brain. Help the parent explore their home environment for situations that might cause their child to hit their head. Help them identify ways to reduce the risk of exposure to their children having a blow to their head.

### **Signs and Symptoms of Traumatic Brain Injury**

Give the parents/caregivers/guardians the two handouts “**Signs and Symptoms of Traumatic Brain Injuries (TBI)**” and “**Quick Reference Guide**”. It is important to remember that signs and symptoms may not manifest immediately after an incident that could cause a TBI. However, it is important to keep track of when and how the child is injured and to discuss the injury, signs and symptoms with a medical provider should signs and symptoms appear.



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