

# CHILDREN AND BRAIN INJURY

**One of the most important differences between children and adults who sustain a brain injury is that a child's brain is still developing.**

Brain injury in children may disrupt the development of particular areas of the brain and neural pathways which can lead to arrested or delayed development of specific skills and abilities. Damage to a young child's brain may often affect the development of global brain function rather than producing specific deficits. Previously acquired skills may also be lost due to substantial brain damage. It is important to remember that there is significant variability in the rate in which children reach developmental milestones and every child is unique.

## LONG-TERM CONSEQUENCES

The initial assessment following injury may not provide a very clear picture of the long-term consequences for two reasons. One reason is that a relative level of physical and cognitive recovery can be expected to occur over time. The second reason is that specific areas of impairment may become more apparent when the child reaches a particular stage of development. At different stages of development children with brain injury may lag behind their peers in a number of functional areas unless intensive rehabilitation is provided. Such rehabilitation or special education assistance may be required to address uneven development across functional areas. The most common long-term effects of brain injury in childhood may be divided into several areas.

### **Sensory and motor**

A child may either lose some previously acquired skills or may have difficulty learning new skills relating to the following: holding a pen, drawing, using a computer keyboard, constructing and manipulating objects, using cutlery, getting dressed, recognizing objects and a variety of other eye-hand coordination activities. Other problems may be balance, coordination or swallowing and speech difficulties. Professionals such as physical therapists, occupational therapists and speech language pathologists play an important role in the assessment and rehabilitation of sensory and motor disorders.

### **Cognitive**

A severe brain injury may lead to a general decline in a number of intellectual abilities. However, similar to adults, a child may be within the normal range on measures of intellectual functioning and yet, display significant problems in specific areas of attention, memory, language, visuo-spatial and executive functioning. Deficits in these areas can affect a child's development across all areas of school-based knowledge and socialization.

### **Language and communication**

The necessary skills for reading, writing and oral communication may be divided into language reception, comprehension and expression. Many children experience receptive problems which involves difficulty processing different parts of spoken or written information. Comprehension problems occur when a child cannot understand what he or she is reading or what another

person is saying. Spoken or written language expression may be affected in terms of pronunciation, fluency, grammar, intelligibility or meaning and retrieval of words.

### **Social, behavioral and emotional**

A child may experience difficulties relating to peers and siblings and have difficulty joining group activities. They may appear very demanding of their parents' or teachers' attention and have difficulty following rules and instructions. A range of behavioral problems may arise after brain injury, which may include: depressed or anxious mood, hyperactivity, distractibility, impulsivity, poor judgment, reduced control of anger and frustration, mood swings, aggression, sleep disturbance, and poor motivation and initiation. When social, behavioral and emotional problems are recognized early in recovery, a number of rehabilitation strategies may be employed in the school and home environment.

### **THE INFLUENCE OF AGE UPON RECOVERY**

The relationship between a child's age at the time of injury and their long-term recovery is not well understood. One particular theory suggests that younger children make a greater recovery than older children due to 'neural plasticity', or the ability of the developing brain to reorganize itself to take over the functions performed by a damaged area. However, there is only a weak amount of support for this theory.

In general, research suggests that injuries acquired at an earlier age are associated with lower levels of functional recovery or outcome across various skill domains. These findings support the view that long-term outcome is greater when basic functional skills are developed prior to a brain injury. The influence of a child's age upon level of recovery may prove less significant than other factors, such as: the severity and type of brain injury, the child's pre-injury skills and experiences, family functioning, rehabilitation and support within the home and at school.

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