

# facts on

## Concussion in Children Under the Age of 6

### What is a Concussion?

A concussion is an injury to the brain that changes or interferes with the way the brain works, usually temporarily. Concussions are also known as mild traumatic brain injuries. The clinical diagnosis of a concussion is based on signs and symptoms because there are no known consistent biological markers of concussions (e.g., no structural damage on standard neuroimaging). A person does not need to lose consciousness to have sustained a concussion. In fact, loss of consciousness occurs in less than 10% of diagnosed concussion cases.

### How Do Concussions Happen?

A concussion can be caused by a blow to the head, face, neck, or body that causes the brain to move rapidly within the skull. Common causes include falls, motor vehicle collisions, contact/collision sports, assaults, or forceful shaking.

### Concussions in Infants and Young Children

Children under the age of six have the highest rates of concussions, with most of these injuries occurring at home. Head bumps are common during early development as children learn to roll, crawl, walk, and jump. While most of these bumps do not result in concussions, some may cause brain injury. Infants and toddlers are particularly vulnerable to concussions due to their relatively large heads, weak neck muscles, limited balance and coordination, and the rapid brain development that occurs in early childhood.

### Signs and Symptoms

A concussion can be especially hard to diagnose in infants, toddlers, and preschoolers because they cannot easily communicate their symptoms. Symptoms may occur right after the incident or appear hours or days later.

### *Common symptoms of a concussion:*

- headache
- dizziness, balance problems
- nausea and/or vomiting
- feeling confused and/or mentally foggy
- blurry vision
- ringing in the ears
- sensitivity to light and/or noise
- trouble concentrating or easily distracted
- trouble remembering
- answering questions slowly and/or repeating questions
- drowsiness, tiredness, or low energy
- changes in mood (e.g., irritability, sadness, nervousness)
- change in sleep patterns (e.g., sleeping more or less, difficulty sleeping)

### *Possible signs of concussion in young children:*

- persistent rubbing of the head
- crying when the head is moved
- inconsolable crying
- increased fussiness or irritability
- change in emotions (e.g. laughing or crying more than usual)
- loss of balance and/or poor coordination
- sleepy or tires easily
- loss of interest in playing with favourite toys or doing favourite activities
- sudden changes in nursing or eating
- other behaviour changes (e.g., blank staring, quieter)

### For More Information

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Children who show clear signs of concussion should receive medical attention.

Red flag symptoms requiring immediate medical attention include:

- loss of consciousness
- loss of vision or double vision
- neck pain or tenderness
- weakness or tingling in more than one arm or leg
- severe or worsening headache
- persistent vomiting
- seizures
- inability to be consoled
- increased confusion
- increased drowsiness or becoming non-responsive
- increased restlessness, agitation, or combative
- visible deformity of the skull or unexplained swelling of the head
- blood or fluid from the ear(s)

### Concussion Treatment

The primary treatment for concussions is relative rest from mental and physical activity to allow the brain to heal, particularly in the first 24 to 48 hours after injury. Rest also reduces the risk of a second injury, which can worsen symptoms and delay healing. Screen time should be limited within the first 48 hours, and calm activities (e.g., colouring, talking with friends and family, listening to a storybook being read) may be allowed as tolerated.

After the initial period of rest, children can gradually return to light activity (e.g., go for a walk, read, paint, play with blocks, puzzles, and/or board games) as long as new symptoms do not appear and existing symptoms do not worsen. If symptoms appear or worsen, it is a sign to reduce activity

until symptoms are resolved.

Recovery time varies by injury severity. Children often take longer to recover than adults, and their symptoms may persist accordingly.

### Concussion Outcomes

Although the symptoms of a concussion typically resolve within a few weeks, a full recovery may take up to six months. In some cases, certain symptoms (e.g., headaches) may persist for months or even years. In children, symptoms lasting longer than four weeks are considered persistent and should be assessed by a medical professional.

Toddlers and preschoolers may experience longer-term outcomes, including:

- effects on cognitive skills and academic achievement (e.g., complex language skills, reading comprehension)
- issues with socio-emotional development (e.g., social interactions and social competence)

The type and extent of lasting effects may depend on the severity of injury and the child's developmental stage at the time of concussion. For example, functions still developing at the time of injury may be the most affected.

### Potential Impacts on Child-Caregiver Relationships

Concussions can strain child-caregiver relationships, particularly when caregivers are unaware that certain behaviours (e.g., irritability, sleep issues, or changes in feeding) are concussion-

related. Providing education and support can help reduce stress and improve outcomes for both the child and caregivers.

### Preventing Concussions in Young Children

Concussions in young children are often caused by safety hazards in their environment. Because children's behaviour cannot always be changed, it is the caregiver's role to identify and manage these hazards. While not all concussions can be prevented, many can be avoided through the tips below.

- Active adult supervision. Staying attentive to what the child is doing and, depending on age, staying physically close.
- Fall prevention, including:
  - not leaving children unattended on high surfaces
  - not leaving infant seats on elevated surfaces
  - removing tripping hazards (e.g., loose rugs)
  - using safety equipment (e.g., straps on infant swings, safety gates, furniture wall anchors, window guards)
- Proper use of car seats.
- Caregiver education on traumatic head injury due to child maltreatment. Support caregivers in managing stress and responding safely to challenging situations, including prolonged crying.
- Consistent and correct use of properly fitted helmets and participation in age-appropriate sports.

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### Select References

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