



# Patient Information

## The Blow by Blow on Head Injury

**M**illions of people experience head injuries every year. This type of injury can result in anything from a mild bump to the skull to loss of consciousness (blacking out or “seeing stars”) to severe brain damage. Fortunately, while even minor head injuries can affect the brain, most do not require hospitalization or long-term recovery.

Any head injury that interferes with the way the brain functions is called a traumatic brain injury, or TBI. A *concussion* (kuhn-kuh-shen) is the most common type of TBI. It usually results from a blow to the head or from the brain hitting the skull, such as when a person is shaken or experiences whiplash. A concussion can cause symptoms ranging from a mild headache to very brief or prolonged unconsciousness. Sometimes, a *contusion* (kuhn-too-zhuhn), which is a bruise that forms on the brain, can result from a concussion. Severe TBI occurs when an injured person remains unconscious for a long period of time. A coma is defined as a period of unconsciousness during which a person responds only a little or not at all to outside stimulation. People who have experienced a severe TBI can recover, but they often are left with permanent changes in their abilities to move, think, and act.

Head injuries are further classified as closed or open. A closed head injury is caused when an object strikes the head but does not enter the brain. An open, or penetrating, injury happens when an object breaks through the skull and enters the brain. Although open head injuries are far less common than closed ones, any head

injury is a serious matter. Therefore, it is important to recognize a TBI and treat it properly.

### How do I know if I'm at risk?

Men are more likely than women to experience a TBI and children are at greater risk than adults. In fact, of all age groups, infants and children up to the age of four and adolescents aged 15 to 19 have the highest risk of TBI. Additionally, certain groups of people, such as those who play contact sports and those who serve in the military (especially paratroopers and personnel who are at risk for blast-related injuries), are at greater risk for TBI. And, of all racial groups, black people have the highest death rate from TBI.

Common causes of TBI include sports activities, falls, motor vehicle accidents, firearm injuries, and assaults.

### What are the warning signs?

The signs and symptoms of what may appear to be a relatively minor head injury can be easy to miss and do not always appear immediately. If your head is struck or you are in an accident, it's important to get immediate medical attention even if you feel fine.

The most common signs and symptoms of a head injury are headache, dizziness, loss of consciousness, memory loss, confusion, ringing in the ears, a bad taste in the mouth, nausea, vomiting, slurred speech, changes in mood and behavior, sensitivity to light and noise, and problems with sleeping. Signs of moderate or severe head injury include muscle weakness, persistent



confusion or vomiting, unequal pupils or unusual eye movements, problems with walking, or coma.

### What tests do I need?

Your doctor will evaluate the severity of your head injury by asking you questions about how you were injured and by testing your memory, concentration, vision, hearing, speech, balance, coordination, and reflexes.

If you have a head injury, you also may have an injury to the spine. Even if your injury is mild to moderate, x-rays of your skull and neck may be performed to check for bone fractures or spinal instability. For moderate to severe injuries (and sometimes even for a mild injury), a computed tomography, or CT, scan will need to be performed. This scan produces detailed images of your brain and skull by taking multiple x-rays. During the painless procedure a person lies still on a table that slides into a large, round x-ray machine.

### How can I avoid the problem?

To reduce the risk of TBI, wear a helmet or other protective head gear when riding a bicycle, motorcycle, or recreational vehicle and when playing sports. Always wear a seat belt while riding in a motor vehicle. Also, never drive if you have been drinking alcohol or taking drugs and never get into a car if the driver is under the influence of drugs or alcohol. If you own firearms, be sure they are stored unloaded in a locked safe and keep bullets in a separate location.

To avoid falls, make sure your home is free of clutter and install such safety features as handrails and nonslip rugs. Get regular vision tests and talk to your doctor about devising a safe exercise program for

you. By improving strength, balance, and coordination, exercise can reduce your risk of falls and TBI.

### How is it treated?

To treat a mild TBI, you should rest and, if necessary, take an over-the-counter pain reliever. (Avoid aspirin as it can increase the risk of bleeding.) The importance of rest after TBI can't be overstated, as experiencing another TBI within days or weeks of a first one could result in a slower recovery and long-term effects on brain functioning. Your doctor can determine the appropriate amount of rest time for you. In some cases, if a child was injured and he or she lost consciousness, playing sports may be prohibited for up to three months after TBI.

Some of the more serious symptoms of TBI—including pain, mood and sleep disturbances, blood clots, seizures, muscle spasms, and problems with awareness and waking—can be treated with a range of medications. In addition to drugs, moderate to severe TBI may require surgery to remove or repair damaged portions of the brain or to drain excess fluid. For severe TBI, physical, occupational, or speech therapy may be necessary.

For more information on head injury, visit the TBI page of the National Institute of Neurological Disorders and Stroke web site (<http://www.ninds.nih.gov/disorders/tbi/tbi.htm>). ●

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