Managing Traumatic Brain Injuries: Best Practices Have Changed

by Mark Connery, M.D., and Linda Lawe, R.N., C.M.P.

Recommenations for managing traumatic brain injuries (TBIs) have changed significantly during recent years. In the past, for example, athletes who hit their heads were kept out of activities for six months or longer, even if they were asymptomatic. Now, guidelines have evolved within 11 states, but also national organizations. As a result, Gillette Children’s Specialty Healthcare, which provides care to more than 1,500 children with TBIs, is evaluating its approach to managing brain injuries and the impact of the new guidelines.

Although TBIs have increased in the general population, the number of sports-related TBIs has decreased. Current guidelines advise that athletes who experience acute brain injuries be evaluated by a health professional within hours of the injury. In addition, it is recommended that follow-up care be provided by a health professional who specializes in treating brain injuries. This is especially true for children and young adults, who are at risk for long-term consequences of brain trauma.

The article reviews the signs and symptoms of TBIs, discusses the possible effects of TBIs, and provides the most appropriate guidelines for managing TBIs. It is necessary that these guidelines are incorporated into the broader hospital or clinic’s approach to assessing and managing brain injuries. A pediatric neurotrauma specialist should also be involved in the management of brain injuries. Clinical guidelines for managing brain injuries can be found on the Gillette Children’s Specialty Healthcare website.

Referral Information

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Some symptoms might start appearing days or even weeks after a head injury. For example, a child who appears to be fine initially may later have trouble sleeping, have problems concentrating at school, or have increased irritability, headaches, or forgetfulness. These symptoms might be more noticeable in children and adolescents and may include:

- Inability to concentrate
- Problems with learning or making decisions
- Irritability
- Changes in behavior or mood
- Headaches
- Nausea or vomiting
- Difficulty with balance or coordination
- Sleep disturbances
- Fatigue
- Changes in speed of movement

Injuries to the back of the head are more likely to cause symptoms and require medical evaluation than injuries to the front of the head.

Avoiding Second-Impact Syndrome

Second-impact syndrome refers to a condition that might occur if a second TBI takes place while the brain is still recovering from a previous TBI. A second impact can occur days or weeks after the first injury.

The likelihood of a child sustaining a second impact is increased if there have been multiple previous impacts, even if there are no observable symptoms. Although children are more likely to sustain a second impact than adults, second-impact syndrome can occur in adults as well. The severity of the second impact can be life-threatening.

The symptoms of second-impact syndrome may include:

- Changes in behavior
- Changes in speech
- Changes in memory
- Changes in mood
- Changes in physical abilities

Seek prompt medical attention if any of these symptoms are observed.

Managing a TBI

Children and teens who sustain TBI are best treated in a hospital setting, usually in a neurosurgical unit or a rehabilitation unit. The symptoms of second-impact syndrome may be similar to those of a concussion.

The symptoms of second-impact syndrome may be subtle, and it is important to follow up with a doctor to assess the severity of the injury.

The long-term effects of TBIs include:

- Depression
- Anxiety
- Fatigue
- Memory problems
- Changes in personality

The long-term effects of TBIs can affect a child's ability to function in school and in daily life. It is important to follow up with a doctor to assess the severity of the injury.

Testing for TBIs

Testing for TBIs can be challenging. The symptoms of TBIs can be mild or severe, and they can occur in children of all ages. Testing for TBIs may include:

- Imaging studies such as CT scans or MRIs
- Blood tests
- Electroencephalography (EEG)
- Neuropsychological testing

The diagnosis of TBI is often made through a combination of clinical symptoms and testing.

The cost of testing for TBIs can be significant, and many insurance plans do not cover the full cost of testing.


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• Uncoordinated hand-eye movements
• Memory problems including amnesia
• Headache
• Nausea or vomiting
• Difficulty with balance or coordination
• Changes in behavior or mood
• Changes in physical abilities

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The cost of testing for TBIs can be significant, and many insurance plans do not cover the full cost of testing.
Injuries that result from the back of the head are more likely to cause nausea and vomiting than other types of impacts.

Some symptoms might not appear until days or weeks after an injury. Warning signs include dizziness, headaches, sleep difficulties, personality or behavioral changes, confusion, difficulty in focusing or remembering, irritability, extreme agitation, and emotional lability. It is important to be aware of these signs and symptoms and seek medical care if they are observed.

Patients who experience TBI are often stalked for years and may be at risk for continued symptoms. TBI can result in persistent emotional issues, including anxiety, depression, and irritability. Some evidence suggests that patients who sustain TBI become more emotionally unstable than their peers, even from before the injury. Some researchers speculate that the injury may cause an increase in the number of brain cells, which could result in more frequent emotional outbursts.

The likelihood of athletes experiencing TBIs is related to the incidence of such injuries. In professional football players, the incidence of TBIs is higher than in college and high school athletes. The likelihood of high school athletes experiencing a TBI is lower than in college or professional athletes.

Warning signs include chronic headaches, fatigue, difficulty in concentrating, and sleep disturbances. Some symptoms might not appear until hours or days after the injury. Warning signs include abnormal behavior, changes in personality, and difficulty in concentrating. These symptoms can be caused by a mild TBI or a moderate TBI.

Managing a TBI

Children and teens who maintain their level of consciousness and do not experience any further symptoms or complications should be monitored by a health care provider. Adolescents and teens should see a health care provider as soon as possible. A health care provider can help determine when an athlete has recovered from a TBI.

High school football players should be evaluated for any new symptoms or worsening of existing symptoms. A health care provider can assess for any abnormalities in performance or behavior. Adolescents and teens should see a health care provider as soon as possible. A health care provider can help determine when an athlete has recovered from a TBI.

Summary

In summary, athletes who take part in contact sports should take a baseline SPECT scan as part of the pre-employment physical. When athletes come to a pre-employment physical, they should be evaluated for any new symptoms or worsening of existing symptoms. A health care provider can assess for any abnormalities in performance or behavior. Adolescents and teens should see a health care provider as soon as possible. A health care provider can help determine when an athlete has recovered from a TBI.

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Managing Traumatic Brain Injuries: Best Practices Have Changed

by Mark Gomedy, M.D., and Linda Lawe, R.N., C.N.P.

Recommenedations for managing traumatic brain injuries (TBI) have changed significantly during recent years. To be fair, for example, athletes who lost their frontal or parietal lobes, but allow concussions resolved within 31 years, routinely returned to those activities.

Today, neurotrauma specialists and other providers use more reliable to the possible traumatic consequences of TBI—particularly multiple trauma. In any case, specific care in a strong procedure of early diagnosis and to study those with or TBI and particular attention to injuries that occur in hospital.

This article reviews the signs and symptoms of TBI, discusses the possible effects of TBI, and addresses the most appropriate providers for managing TBI. It should be noted that the most important tools for assessing head trauma are the immediate Post-concussion Assessment and Cognitive Testing (ImPACT®), a computerized test that the patient can take at home or in a hospital. Patients with TBI should not take the test until they are out of the hospital. The test results help to determine when a patient can return to activity following TBI. Many schools, offices, and sports teams have adopted this test and it is highly successful.

ImPACT® assessments should take place within 24 to 72 hours of any injury, with repeat testing only if necessary. Gillette patients undergo ImPACT® assessments before they are discharged from the hospital. For more information about ImPACT®, visit www.gillettechildrens.com/impact.

Signs and Symptoms of TBI

TBI occurs when an impact to the head or body causes the brain to move at a rapid rate, which can result in the brain moving inside the skull, the brain causing damage to the brain. The cause is often structural but also catastrophic. The cells release paraplegic and result in tissue damage; this can cause death if not treated immediately. As a result, the brain no longer function as it should, and the patient is unable to return to their normal activities.
Immediate symptoms of a TBI can include:

- Disorientation. Temporary confusion is a normal finding.
- Disorientation.
- Headache.
- Memory problems, including amnesia around the time of injury.

Secondary or late effects may occur in the form of:

- Neurological symptoms, such as changes in behavior or sleep patterns.
- Physical symptoms, such as headaches, dizziness, and weakness.
- Sensitivity to light or noise.
- Dizziness when standing quickly.
- A poor attention span.
- Anxiety.

Often, these symptoms might not appear for days or weeks after an injury. By framing again include chronic headaches, fatigue, sleep difficulties, or behavioral changes,等症状 are likely to occur. However, some children display the following symptoms:

- A poor attention span.
- A poor memory.
- Fatigue.
- Headaches.
- Dizziness when standing rapidly.
- A rapid return to school and sports.

Some symptoms might appear and disappear over time. If any symptom persists, especially if it causes a decrease in activity, it should be considered.

Children and teens should see a healthcare provider as soon as symptoms appear.

Avoiding Second-Impact Syndrome

Second-impact syndrome refers to a condition that might occur if a second TBI occurs while a person is still experiencing symptoms from a previous TBI. A second impact can occur days or weeks after the first injury.

The likelihood of athletes experiencing a TBI after a second impact is determined by experiencing the first TBI. Aerobic injuries can also cause a lack of symptoms, such as headaches, memory loss, and dizziness. Being aware of these symptoms is crucial for a second impact. Before the team has learned from an initial injury, a lack of symptoms increases the risk of a second injury.

Allowing enough recovery time before returning to activities is crucial for preventing further damage to the brain. Second impacts are more likely to cause severe injury, such asbrain swelling and other undersirable damage, and secondary impacts can lead to death.

Long-Term Effects of TBIs

The long-term effects of multiple TBIs can be severe, and the effects of each injury might not be immediately noticeable. Often, parents or their peers cannot discern that they did not make the onset of injury if the patient recovered. Secondary issues can further increase their symptoms. Secondary issues include their symptoms.

Secondary issues include:

- Fatigue.
- Headaches.
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- A rapid return to school and sports.

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How to Manage Traumatic Brain Injuries in Athletes

In the past, traumatic brain injuries (TBIs) were generally not recognized as a serious injury, and a common belief was that the injury was not treated or managed seriously. Today, TBIs are recognized as a major health concern, and it is known that they are responsible for a variety of cognitive and physical impairments. For example, concussions, which are the most common type of TBI, can cause symptoms such as headaches, dizziness, and difficulty concentrating. It is important to treat TBIs properly to prevent long-term effects.

If symptoms warrant a visit to the hospital, players should avoid contact activities for six months.

If symptoms are only week with a TBI, they should be symptom free for one week before they return to athletic activity.

If symptoms last for more than one week, they should be symptom free for one week before they return to athletic activity for an entire season.

Referral Information
Gillette provides a referral system for pediatric, community and orthopaedic referrals. To schedule an appointment or make a referral, contact Patient Registration at 651-225-8585. Patients who are not able to speak English can call patients by calling 651-225-8484.

Managing Traumatic Brain Injuries:
Best Practices Have Changed

by Mark Connoly, M.D., and Linda Lawee, R.N., C.N.P.

Recommendations for managing traumatic brain injuries (TBIs) have changed significantly during recent years. In the past, for example, athletes who felt that their brains were damaged and felt dizzy were allowed to return to their activities as soon as they felt better. Today, however, TBIs are recognized as serious injuries, and proper management is essential to prevent long-term effects.

Today, neurotrauma specialists and other providers are more sensitive to the potential long-term consequences of TBIs—particularly in young people. Neurotrauma providers are on a strong push to help children and youth and other TBI and provide information on behavior and management of patients that the return to their activities.

This article reviews the signs and symptoms of TBIs, discusses the possible effects of TBIs, and addresses the most appropriate practices for managing TBIs. As a result of new research, it is now clear that one of the most important tools for assessing head injuries is the ImPACT Post-concussion Assessment and Cognitive Testing (ImPACT) system. (See column at right.) By suggesting that athletes take an ImPACT assessment as part of their preparticipation physical, you can alert your patients to the dangers of TBIs and encourage patients to seek treatment if they have local injuries.

Signs and Symptoms of TBIs

TBIs occur when an impact to the head or body causes the brain to move rapidly inside the skull, causing selective cells, axons and blood vessels. When the brain hits the skull, the inner stretch and the impact are transmitted to the brain. The injury is not only structural but also metabolic. The cells release serotonin and other chemicals. This chemical makes it difficult for cells to produce adenosine triphosphate, and because the brain consumes glucose to absorb the serotonin, the brain's ability to create energy for healing.

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