

# Headaches after Traumatic Brain Injury

For more information, contact your nearest TBI Model System. For a list of TBI Model Systems go to: <http://msktc.washington.edu/tbi/findms.asp>

This publication was produced by the TBI Model Systems in collaboration with the Model Systems Knowledge Translation Center (<http://msktc.washington.edu>) with funding from the National Institute on Disability and Rehabilitation Research in the U.S. Department of Education, grant no. H133A060070.

Headache is one of the most common symptoms after traumatic brain injury (often called “post-traumatic headache”). Over 30% of people report having headaches which continue long after injury.

## Why are headaches a problem after brain injury?

Headaches after TBI can be long-lasting, coming and going even past one year. Headaches can make it hard for you to carry out daily activities or can cause you to have more difficulty thinking and remembering things.

## Why do headaches happen after brain injury?

Right after a severe TBI, people may have headaches because of the surgery on their skulls or because they have small collections of blood or fluid inside the skull.

Headaches can also occur after mild to moderate injury or, in the case of severe TBI, after the initial healing has taken place. These headaches can be caused by a variety of conditions, including a change in the brain caused by the injury, neck and skull injuries that have not yet fully healed, tension and stress, or side effects from medication.

## What are some typical kinds of headaches after TBI?

### Migraine headaches

These kinds of headaches happen because an area of the brain becomes hypersensitive and can trigger a pain signal that spreads out to other parts of the brain (like the ripples that spread out after you drop a pebble in water). These headaches typically have the following features:

- Dull, throbbing sensation, usually on one side of the head.
- Nausea or vomiting.
- Light and sound sensitivity.
- Pain level rated as moderate to severe.
- You might get a “warning” signal that a migraine is coming on, such as seeing spots or bright lights. This is called an “aura.”

### Tension-type headaches

These headaches are associated with muscle tension or muscle spasms and stress. They usually have the following features:

- Tight, squeezing sensation, often around the entire head or on both sides.

- Pain level rated as mild to moderate.
- Occur later in the day.

### Cervicogenic headaches

This type of headache can occur when there has been some injury to the muscles and soft tissues in the neck and the back of the head. Many nerves that are located in the tissues and bones of the neck have branches that travel to the skull and scalp and can result in head pain. This type of headache usually has these features:

- Often start in the neck, shoulders and back of the head, and sometimes travel over the top of the head.
- Neck movement or positioning can make the pain worse.
- These headaches are not usually associated with nausea and can range from mild to severe.

### Rebound headaches

Sometimes the very medicines used to treat headaches can actually cause headaches. When pain medicines are taken daily on a regular schedule, missing one or two doses can result in a headache.

You also can develop a rebound headache if you decrease the amount of caffeine you use. For example, if you normally drink a lot of coffee, tea or energy drinks but don't get your usual amount, you may get a headache.

### Other facts about headaches

Although there are many other types of headaches, these are the most frequent. It is not unusual for someone to have two different types of headache. For certain headaches like migraine, a family history is common.

### Should I worry about having a headache?

Most headaches are not dangerous. In the first few days after a concussion or head injury, a person should see a health care professional experienced in treating persons with brain injuries IF the following occurs:

- Your headache gets worse.

- You have nausea and/or vomiting with a headache.
- You develop arm or leg weakness or problems speaking along with a headache.
- You have increasing sleepiness with headache.

### Do I need special tests to diagnose a headache?

In the first few days after a head injury, doctors will often order a CT scan of your brain to make sure there is no bleeding in your head. After that, a brain scan or other test is rarely needed in order to diagnose a headache accurately.

Usually, the health care provider will rely on your history and symptoms to sort out what kind of headache you are having and how to treat it.

### What can be used to treat a headache after TBI?

This will depend on each individual case. It's important to discuss your headaches with your doctor and to keep track of headaches and your response to treatment. Many people use a headache diary to help them do this.

### Lifestyle changes to help prevent headaches

The first steps in treating any type of headache don't involve drugs or other therapy. Many times, lifestyle factors can trigger headaches or make headaches worse. Making simple changes can often make a big difference in whether or not headaches occur. Try to:

- Get enough sleep.
- Get daily exercise. Aerobic exercise such as walking and good stretching often help to prevent headaches by improving sleep and decreasing triggers. If a headache is worsened by any particular exercise, check with your health care provider.
- Avoid caffeine.
- Avoid certain foods that may trigger a headache, like red wine, monosodium glutamate (MSG, a common food additive) or certain cheeses.

- Avoid taking pain medicines on a daily basis unless your health care provider prescribes it.

## Common types of treatment for occasional headaches include:

- Over-the-counter pain medicines like acetaminophen (Tylenol®) or ibuprofen.
- Prescription medicines for migraine headache like sumatriptan (Imitrex®).
- Relaxation therapy/meditation.
- Biofeedback therapy.
- Stretching and self-massage.
- Acupuncture.
- Local injections (numbing medication or steroids, or for example) to muscles, nerves or joints of the cervical spine.
- Therapeutic massage.
- Heat or ice packs.

## Treatments for recurrent headaches that happen more than twice a week

Headaches that occur frequently may require a prescription from your physician. The following medications may be used to treat headaches following TBI:

- Antidepressants.
- Antiseizure medicines (like gabapentin, also called Neurontin®).
- Certain blood pressure medication called beta-blockers (like propranolol).
- Botulinum toxin (Botox) injections.

## References

Hoge CW, McGurk D, Thomas JL, Cox, AL, Engel CC, Castro C A (2008). Mild traumatic brain injury in u.S. Soldiers returning from iraq. *N Engl J Med*, 358(5), 453-463.

Lahz S, Bryant RA (1996). Incidence of chronic pain following traumatic brain injury. *Arch Phys Med Rehabil*, 77(9), 889-891.

Lew HL, Lin PH, Fuh JL, Wang SJ, Clark DJ, Walker WC (2006). Characteristics and treatment of headache after traumatic brain injury: A focused review. *Am J Phys Med Rehabil*, 85(7), 619-627.

Marcus DA (2003). Disability and chronic posttraumatic headache. *Headache*, 43(2), 117-121.

Mihalik JP, Stump JE, Collins MW, Lovell MR, Field M, Maroon JC (2005). Posttraumatic migraine characteristics in athletes following sports-related concussion. *J Neurosurg*, 102(5), 850-855.

## Source

Our health information content is based on research evidence whenever available and represents the consensus of expert opinion of the TBI Model System directors.

## Authorship

Headaches after Traumatic Brain Injury was developed by Kathleen R. Bell, MD, Jeanne Hoffman, PhD, and Thomas Watanabe, MD, in collaboration with the Model Systems Knowledge Translation Center.

## Disclaimer

This information is not meant to replace advice from a medical professional. You should consult your health care provider regarding specific medical concerns or treatment.