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## Headache

### What is a headache?

Headache is a condition that's one of the most common causes of pain and a major reason people miss work or school—and visit the doctor. Talk with a doctor if headaches affect your daily life.

Headaches vary in how often they happen and how much pain they cause. Some headaches may happen repeatedly (episodic) or last for days or weeks at a time (chronic). Pain can range from mild to severe and may come with symptoms such as nausea or increased sensitivity to noise or light.

There are three groups of headaches. Primary headaches happen on their own, while secondary headaches happen because of some other medical condition. A third group includes neuropathies, facial pains, and other headaches that happen because of nerve damage or cause head pain that doesn't fit under the symptoms of primary or secondary headaches.

### Primary headache

Primary headache falls into four main groups:

- Tension-type headache
- Migraine
- Trigeminal autonomic cephalalgias
- Other primary headache conditions

Tension-type headache is the most common type of headache condition. People can have infrequent, frequent, or chronic episodes of this type of headache. Although the exact reasons why some people have tension-type headache is unknown, recent research shows that a person's genes, brain signals, and muscle tenderness play important roles.

The “tension” in the name points to how emotional stress is an important trigger for this kind of headache. This stress can lead muscles in the neck, face, scalp, and jaw to contract. Other common triggers are:

- Mental strain
- Not enough or poor quality sleep
- Physical postures that strain the head or neck (such as reading, working on a computer, or staring at a cell phone screen)
- Alcohol use
- Dehydration (not getting enough water)
- Sunlight exposure

The pain from tension-type headache is usually mild to moderate and feels like constant pressure on the face, head, or neck. It may also feel like a belt is being tightened around the head. Most people feel pain on both sides of the head.

People who have tension-type headache also may feel sensitive to light or sound (but not both). Tension-type headache differs from migraine in that there’s no pre-headache aura, nausea, or vomiting. It also doesn’t get worse with everyday physical activities, like walking or climbing stairs.

Tension-type headaches can last from 30 minutes to seven days. Chronic tension-type headaches happen more often and can last from hours to days or constantly. The headaches usually begin around puberty and peak in a person’s 30s.

Tension-type headache is more likely to happen to:

- Women
- Younger people
- People who often experience tiredness and have difficulty sleeping
- People with a history of migraine
- People with a history of depression

Migraine is a health condition where a person has repeated attacks of moderate to

severe throbbing and pulsating pain on one side of the head. Migraine happens in both children and adults—and it affects women more often than men.

Find out more information on migraine.

TACs are rare conditions where pain happens on one side of the head. People also have symptoms like eyelid swelling, nose congestion, and sweating. There are five subtypes under the larger TAC category:

- Cluster headache
- Paroxysmal hemicrania
- Short-lasting unilateral neuralgiform headache attacks (SUNCT)
- Hemicrania continua
- Probable TACs

The most common type of TAC is cluster headache, which can also be the most severe type of primary headache. It involves sudden, extremely painful attacks usually at the same time of the day or night for several weeks. Cluster attacks happen in a series (called a “cluster period”). Attacks can happen sometime between every other day to eight times per day during a cluster period.

During a cluster attack, people often feel pain on one side of the head, often behind or around one eye. The pain usually peaks five to 10 minutes after starting and continues at that intensity for up to three hours.

The nose and the eye on the affected side of the face may get red, swollen, and teary. Some people will experience restlessness and nervousness, changes in heart rate and blood pressure, and sweating. Cluster attacks often wake people from sleep.

Cluster headache generally begins between the ages of 20 and 40 but may start at any age. It’s more common in men than in women. Cluster headache is also more common in smokers than in nonsmokers. Alcohol (especially red wine) and smoking can trigger cluster headache attacks.

Cluster attacks usually happen less often and are shorter than migraine attacks. It's

common to have one to three cluster attacks a day with two cluster periods a year, separated by months without symptoms. The cluster periods often appear seasonally, usually in the spring and fall, and may be mistaken for allergies. Cluster attacks happen more often at night than during the day, which may mean they're related to the sleep-wake cycle.

A small group of people develop a chronic form of cluster headache. This comes with cluster periods that can go on for years with only short times without pain.

Paroxysmal hemicrania is another type of TAC that features severe throbbing and claw-like pain, usually on one side of the face near the eye and occasionally around the back of the neck during attacks. People may also feel dull pain, soreness, or tenderness between attacks. Paroxysmal hemicrania attacks happen multiple times a day and last up to 30 minutes. The attacks may be chronic or happen for a while and then go away (episodic).

SUNCT headache attacks come with bursts of moderate to severe burning, piercing, or throbbing pain, usually on one side of the head and around the eye or temple. The person's systolic blood pressure may rise during the attacks. These attacks last for as little as one second or as many as 10 minutes and usually happen during the day. People generally have several attacks per hour and also may experience a watery, red eye on the same side where they feel pain.

Hemicrania continua is a chronic type of headache with constant pain that happens on the same side of the face and head. Some people with hemicrania continua have pain on both sides of the head. Attacks of increased pain happen several times within a 24-hour period. A characteristic of this type of headache is that the pain goes away with treatment with the non-steroidal anti-inflammatory drug (NSAID) indomethacin.

There are also other types of primary headache conditions that don't fit the symptoms of tension-type headache, migraine, or TACs. It can be hard to diagnose these types of headache, but a doctor can help by using tests and considering all symptoms a person

has.

## Secondary headache

Secondary headache is a symptom of another health condition that presses on, pulls, or pushes pain-sensitive nerve endings. These types of headache come from conditions that affect the brain. Some of the causes of secondary headache include:

- Blood vessel disorders in the brain, including stroke
- Brain tumor
- Brain injury
- Change in routine, like airplane travel or fasting
- High blood pressure
- Seizures
- Substance misuse or withdrawal
- Infection

## Neuropathies, facial pain, and other headaches

Some types of headache can happen from neuropathy, which is damage to the nerves. One example is trigeminal neuralgia, a condition with sudden attacks of severe facial pain. Trigeminal neuralgia affects the trigeminal nerves.

Occipital neuralgia is a rare neurological condition that involves shooting, shocking, throbbing, burning, or aching pain around the head area. The most common symptom of occipital neuralgia is pain that begins in the neck, which then spreads upward. Occipital neuralgia affects the occipital nerves.

## Why headaches hurt

The brain itself doesn't feel pain. Often, headaches happen when pain-sensitive nerve endings (or neurons) respond to triggers or signals in our body—stress, certain foods or smells, or some medicines can cause these signals. The nerve endings then send that message to the brain. It can feel like pain coming from deep in the head, even when the problem is elsewhere.

Find out more about how the brain works.

Who is more likely to get a headache?

Anyone can experience a headache, and certain types of headache conditions run in families. Headache conditions affect some people more than others.

Some people may experience a headache attack after eating certain foods. A diet journal can help people keep track of the foods they've eaten and how they felt after.

The following foods or ingredients may trigger headache attacks, especially migraine attacks, in some people:

- Aged cheeses
- Aspartame (sugar substitute)
- Caffeine (or caffeine withdrawal)
- Chocolate
- Cured or processed meats (such as deli meats)
- Monosodium glutamate (MSG)
- Nuts, especially salted ones
- Wine and other types of alcohol

Other triggers that lead to a headache attack include:

- Emotional stress (such as from school activities, moving, or family problems)
- Weather changes
- Changes in eating and sleep patterns
- Dehydration

Headache conditions are common in children and teens. Headache conditions that begin early in life can develop into migraine as children grow older.

Headache treatment in children and teens usually includes:

- Fluids (like drinking more water)
- Improved diet
- Daily exercise

- Addressing sleep problems
- Over-the-counter pain relief medicines

Always talk with a doctor before giving headache medicines to a child. Get medical care as soon as possible for headaches that happen after a brain injury or if a child also has a rash, fever, or sleepiness.

It may be hard to identify the type of headache because children often have problems describing where it hurts, how often the headaches happen, and how long they last. Asking a child with a headache to draw a picture of where the pain is and how it feels can make it easier for a doctor to determine the proper treatment.

Pay attention to whether or not a child is able to eat during a headache attack. Very young children may seem cranky or irritable and may mention stomach pain.

How are headaches diagnosed and treated?

Not all headaches need treatment from a doctor. But headaches can sometimes signal a more serious health condition that does require medical care.

Call or see a doctor right away if you or someone you're with experiences any of these symptoms:

- A sudden, severe headache, possibly with a stiff neck
- A severe headache with fever, nausea, or vomiting that's not related to another illness
- A person experiencing their "first" or "worst" headache that also has confusion, weakness, double vision, or loss of consciousness
- A headache that gets worse over days or weeks or changes in pattern or behavior
- Headaches in children that keep coming back
- A headache after a brain injury
- A headache with loss of sensation or weakness in any part of the body—this could be a sign of a stroke
- A headache with convulsions (shaking) or trouble breathing

- Two or more headaches a week
- A constant headache in someone who hasn't had headaches before, especially if they're over age 50
- New headaches in someone with a history of cancer or HIV/AIDS

### Diagnosing headache

To diagnose the possible cause of a person's headache, a doctor will review the person's medical and headache history and do physical and neurological exams. They may then order lab screening and diagnostic tests to find out if there's a specific cause of the headaches. These can include:

- Blood, urine, and fluid tests
- CT (computed tomography) scan
- MRI (magnetic resonance imaging)
- EEG (electroencephalogram)

Find out more about neurological diagnostic tests and procedures.

Understanding what's causing a person's headache can help with diagnosis. A headache journal can help a doctor better diagnose the type of headache and find the best treatment. After each headache, write down:

- The time of day when it happened
- How intense it was and how long it lasted
- Any sensitivity to light, smells, or sound
- Any activity right before the headache started
- Any medicines taken, including both prescription and over-the-counter
- The quality and length of the previous night's sleep
- Any stress or strong emotions before developing symptoms
- The weather or changes in daily routine
- Food and drinks consumed in the previous 24 hours
- Any other health conditions



People who menstruate can record the days of their periods. Notes about other family members who have a history of headache conditions or other health conditions are also helpful. This can help find any patterns, which can help with making a headache management plan.

### Treating headache

Headache treatment is a partnership between the person having headaches and their doctor. Honest communication is important. Understand that it may take some time to determine the best type of treatment.

The first step in treating a headache is to identify any health conditions that could be causing the headaches. Treating that health condition can also help with any related symptoms, like headaches.

Over-the counter medicines like aspirin, ibuprofen, or acetaminophen can help with pain. Depending on the headache, a doctor may recommend different prescription medicines and procedures:

- Migraine: Triptans (which boost serotonin) can help with pain as it happens. And to help prevent migraine attacks, a doctor may recommend anticonvulsants, beta-blockers, calcium channel blockers, antidepressants, or calcitonin gene-related peptide (CGRP).
- Tension-type headache: Antidepressants can help with these headaches. In people with both migraines and tension-type headaches, triptans (such as Sumatriptan and Zolmitriptan), barbiturates (relaxing or sedative drugs), and ergot derivatives (such as ergotamine and dihydroergotamine) can help.
- Cluster headache: Most doctors will recommend verapamil as the first choice for preventing cluster periods. Other treatments include oxygen therapy (breathing pure oxygen through a mask), triptans, lidocaine, ergots, and octreotide.

Regular overuse of headache medications can actually worsen headache attacks or cause new headache symptoms. A doctor can help make a plan for safe medicine use

and identify treatments to help.

Biofeedback, relaxation training, meditation, and cognitive-behavioral therapy can help people manage stress from headache.

A doctor can provide recommendations for adding physical therapy, massage, and gentle exercise into a treatment plan. More research is needed to see how helpful more involved treatments, like surgery and neurostimulation, are for managing symptoms of headache conditions.

Getting enough sleep can help with headache pain. Generally, too little or too much sleep can worsen headaches. Daytime naps often lower deep sleep at night and can cause headaches in some adults. Exercise and a healthy diet can also help prevent headaches.

Some people find headache support groups helpful for learning how others cope with headache pain and discomfort. Turning to these helpful coping strategies when facing life's stressors can help manage headache pain.

What are the latest updates on headache?

The National Institute of Neurological Disorders and Stroke (NINDS), a part of the National Institutes of Health (NIH), is the leading federal funder of research on the brain and nervous system. NINDS supports new and innovative research to better understand, diagnose, and treat headache conditions. These research projects cover a wide range of topics on headache conditions that may lead to new treatments or potential ways to block intense headache pain. Studies by other investigators are providing more information on headache causes and treatment.

Headache research is ongoing and covers many topics. These are some current research highlights:

Understanding headache

NINDS-supported research has helped to understand the long-term effects of COVID-19 infections, known as Long COVID. Headaches are a potential symptom of Long COVID,

and researchers are starting to identify nervous and immune system changes that can lead to or complicate the condition. Although research is still new, these discoveries could possibly lead to Long COVID treatments.

NINDS also funds research to understand the link between the circadian rhythm (the sleep-wake cycle) and severe headache disorders. Researchers are currently investigating how problems with the circadian rhythm are linked to the timing of intense headache attacks—and how certain genes play a role in this relationship.

NINDS partnered with the American Headache Society (AHS) to gather feedback from clinicians, scientists, people with headaches, representatives from headache organizations, health-care industry representatives, and the public. In 2024, NINDS and AHS published headache research priorities to guide future research on headache research topics—such as causes, treatment, and quality of life, for example.

### Developing and testing new therapies

NINDS funds many studies to help treat headaches. While medicines can provide effective pain relief in most people, other options are available to help manage headache pain. For example, cognitive behavioral therapy (CBT) has the potential to treat chronic headaches in young people. And more research can help determine how tailoring CBT could possibly help manage more complex headaches.

NINDS also leads research on migraines, conducting studies to advance diagnosis and management. [Find the latest updates on migraine research.](#)

### Coordinating Pain Research

Several NINDS activities on pain research—including headache conditions—are focused on coordinating efforts across NIH and with other federal agencies:

- The NIH Pain Consortium is a collaboration between 25 NIH institutes and centers that help identify, coordinate, and promote funding opportunities. It also supports pain research initiatives and activities at NIH.
- The Interagency Pain Research Coordinating Committee (IPRCC) is a Federal advisory

committee created by the Department of Health and Human Services (HHS) to better understand and treat pain.

- The Helping to End Addiction Long-term® or NIH HEAL Initiative® is a major, NIH-wide effort to quickly find scientific solutions to help solve the national opioid public health crisis. Launched in April 2018, the initiative focuses on improving prevention, treatment, and pain management strategies for opioid misuse and addiction. As part of NIH HEAL, NINDS aims to understand how pain happens in order to create effective, non-addictive treatments for pain. The initiative also supports migraine research.

For research articles and summaries on headache, search PubMed, which contains citations from medical journals and other sites.

Clinical trials are studies that allow us to learn more about disorders and improve care. They can help connect patients with new and upcoming treatment options.

How can I or my loved one help improve care for people with headaches?

Consider participating in a clinical trial so clinicians and scientists can learn more about headache conditions. Clinical research with human participants helps researchers learn more about a and perhaps find better ways to safely detect, treat, or prevent disease.

All types of participants are needed—those who are healthy or may have an illness or disease—of all different ages, sexes, races, and ethnicities. This helps make sure that study results apply to as many people as possible, and that treatments will be safe and effective for everyone who will use them.

For information about participating in clinical research visit NIH Clinical Research Trials and You. Learn about clinical trials currently looking for people with headache at [Clinicaltrials.gov](https://clinicaltrials.gov), a searchable database of current and past clinical studies and research results.

Where can I find more information about headaches?

Information is available from the following organizations:

American Headache Society (AHS) 856-423-0043 [ahshq@talley.com](mailto:ahshq@talley.com)

American Chronic Pain Association (ACPA)913-991-4740

National Headache Foundation312-274-2650info@headaches.org

Learn about related topics

- [Migraine](#)
- [Migraine Trainer](#)
- [Pain](#)

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