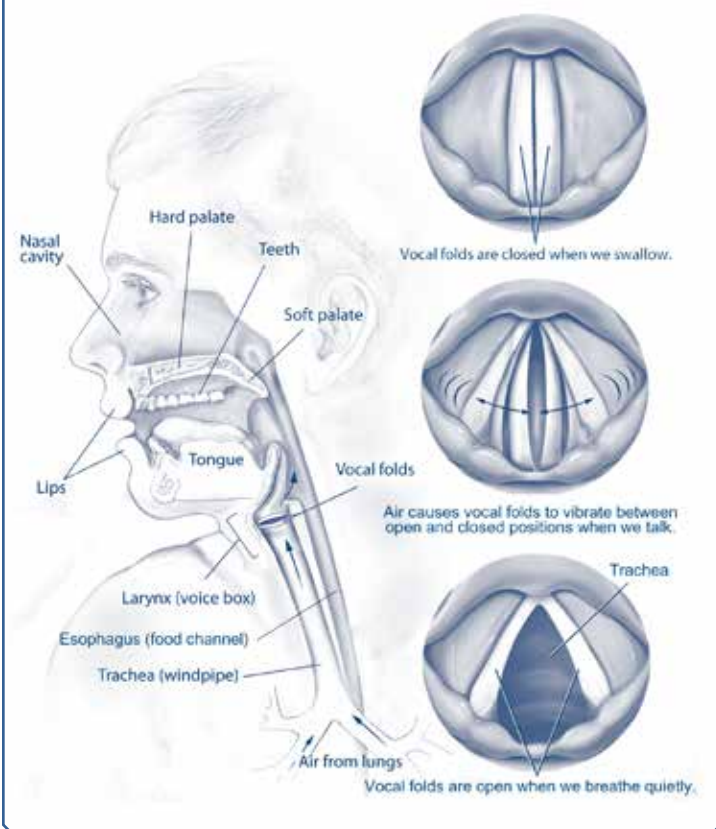


NIDCD Fact Sheet | **Voice, Speech, and Language****Taking Care of Your Voice****What is voice?**

The sound of your voice is produced by vibration of the vocal folds, which are two bands of smooth muscle tissue that are positioned opposite each other in the larynx. The larynx is located between the base of the tongue and the top of the trachea, which is the passageway to the lungs (see figure).

When you are not speaking, the vocal folds are open so that you can breathe. When it's time to speak, however, the brain orchestrates a series of events. The vocal folds snap together while air from the lungs blows past, making them vibrate. The vibrations produce sound waves that travel through the throat, nose, and mouth, which act as resonating cavities to modulate the sound. The quality of your voice—its pitch, volume, and tone—is determined by the size and shape of the vocal folds and the resonating cavities. This is why people's voices sound so different.

Many people use their voices for their work. Singers, teachers, doctors, lawyers, nurses, sales people, and public speakers are among those who make great demands on their voices. This puts them at risk for developing voice problems. An estimated 17.9 million adults in the U.S. report problems with their voice. Some of these disorders can be avoided by taking care of your voice.

**Structures involved in speech and voice production**

## How do you know when your voice is not healthy?

If you answer “yes” to any of the following questions, you may have a voice problem:

- ▶ Has your voice become hoarse or raspy?
- ▶ Have you lost your ability to hit some high notes when singing?
- ▶ Does your voice suddenly sound deeper?
- ▶ Does your throat often feel raw, achy, or strained?
- ▶ Has it become an effort to talk?
- ▶ Do you find yourself repeatedly clearing your throat?

If you think you have a voice problem, consult a doctor to determine the underlying cause. A doctor who specializes in diseases or disorders of the ears, nose, and throat, and who can best diagnose a voice disorder, is an otolaryngologist (oh-toe-lar-in-GAH-luh-jist), sometimes called an ENT. Your otolaryngologist may refer you to a speech-language pathologist. A speech-language pathologist can help you improve the way you use your voice.

## What causes voice problems?

Causes of voice problems include:

- ▶ Upper respiratory infections
- ▶ Inflammation caused by gastroesophageal reflux (sometimes called acid reflux, heartburn, or GERD)
- ▶ Vocal misuse and overuse
- ▶ Growths on the vocal folds, such as vocal nodules or laryngeal papillomatosis
- ▶ Cancer of the larynx
- ▶ Neurological diseases (such as spasmodic dysphonia or vocal fold paralysis)
- ▶ Psychological trauma.

Most voice problems can be reversed by treating the underlying cause or through a range of behavioral and surgical treatments.

## Tips to prevent voice problems

Stay hydrated:

- ▶ Drink plenty of water. Six to eight glasses a day is recommended.
- ▶ Limit your intake of drinks that contain alcohol or caffeine, which can cause the body to lose water and make the vocal folds and larynx dry. Alcohol also irritates the mucous membranes that line the throat.
- ▶ Use a humidifier in your home. This is especially important in winter or in dry climates. Thirty percent humidity is recommended.
- ▶ Avoid or limit use of medications that dry out the vocal folds, including some common cold and allergy medications. If you have voice problems, ask your doctor which medications would be safest for you to use.

Maintain a healthy lifestyle and diet:

- ▶ Don't smoke and avoid second-hand smoke. Smoke irritates the vocal folds. Also, cancer of the vocal folds is seen most often in individuals who smoke.
- ▶ Avoid eating spicy foods. Spicy foods can cause stomach acid to move into the throat or esophagus, causing heartburn or GERD.
- ▶ Include plenty of whole grains, fruits, and vegetables in your diet. These foods contain vitamins A, E, and C. They also help keep the mucus membranes that line the throat healthy.
- ▶ Wash your hands often to prevent getting a cold or the flu.
- ▶ Get enough rest. Physical fatigue has a negative effect on voice.
- ▶ Exercise regularly. Exercise increases stamina and muscle tone. This helps provide good posture and breathing, which are necessary for proper speaking.
- ▶ If you have persistent heartburn or GERD, talk to your doctor about diet changes or medications that can help reduce flare-ups.
- ▶ Avoid mouthwash or gargles that contain alcohol or irritating chemicals. If you still wish to use a mouthwash that contains alcohol, limit your use to oral rinsing. If gargling is necessary, use a salt water solution.

- ▶ Avoid using mouthwash to treat persistent bad breath. Halitosis (bad breath) may be the result of a problem that mouthwash can't cure, such as low grade infections in the nose, sinuses, tonsils, gums, or lungs, as well as from gastric acid reflux from the stomach.

Use your voice wisely:

- ▶ Try not to overuse your voice. Avoid speaking or singing when your voice is hoarse or tired.
- ▶ Rest your voice when you are sick. Illness puts extra stress on your voice.
- ▶ Avoid using the extremes of your vocal range, such as screaming or whispering. Talking too loudly and too softly can both stress your voice.
- ▶ Practice good breathing techniques when singing or talking. Support your voice with deep breaths from the chest, and don't rely on your throat alone. Singers and speakers are often taught exercises that improve this kind of breath control. Talking from the throat, without supporting breath, puts a great strain on the voice.
- ▶ Avoid cradling the phone when talking. Cradling the phone between the head and shoulder for extended periods of time can cause muscle tension in the neck.
- ▶ Consider using a microphone when appropriate. In relatively static environments such as exhibit areas, classrooms, or exercise rooms, a lightweight microphone and an amplifier-speaker system can be of great help.
- ▶ Avoid talking in noisy places. Trying to talk above noise causes strain on the voice.
- ▶ Consider voice therapy. A speech-language pathologist who is experienced in treating voice problems can teach you how to use your voice in a healthy way.

## What research on voice is the NIDCD supporting?

The National Institute on Deafness and Other Communication Disorders (NIDCD) supports research that includes laboratory studies to understand diseases and

stresses that can harm the voice, and clinical research to test new ways to diagnose, treat, or cure voice disorders.

Researchers are exploring how the brain controls the muscles and nerves of the larynx and tongue, and how these structures move to produce speech. This information may help other scientists design better treatments for conditions such as vocal fold paralysis and spasmodic dysphonia, which can damage the voice. It may also help researchers design new rehabilitation strategies to improve the quality of life for people challenged by severe voice disorders.

Another area of interest to researchers is developing replacement tissues to repair damaged vocal folds. NIDCD-funded scientists are testing man-made and biological materials and stem cell technologies that may eventually be used to engineer new vocal fold tissues, as well as methods to encourage nerve regrowth to treat laryngeal paralysis.

Researchers are also looking at new ways to assess vocal disorders and testing new methods of voice therapy for people with growths on the vocal folds. Research continues to explore ways to prevent scarring of the vocal fold after injury and to treat vocal scarring when it occurs. Additional ongoing research studies aim to understand the mechanisms of laryngeal papillomatosis caused by HPV (human papillomavirus), and to develop new drug treatments for the disorder.

New techniques to combat age-related weakness in the laryngeal muscles have the potential to prevent voice disorders in the aging population. Recent results from NIDCD-funded researchers showed that, in an animal model of the aging voice, vocal training exercises helped the muscles of the larynx stay strong.

Because teachers have a high incidence of vocal disorders, the NIDCD is supporting the development of an educational website for teachers to support healthy behaviors and protection of their voices. The NIDCD is also supporting research into the effectiveness of voice hygiene education and voice production training for teachers.



National Institute on  
Deafness and Other  
Communication Disorders



## Where can I find additional information about voice and voice disorders?

The NIDCD maintains a directory of organizations that provide information on the normal and disordered processes of hearing, balance, taste, smell, voice, speech, and language. Visit the NIDCD website at <http://www.nidcd.nih.gov> to search the directory.

Use the following keywords to help you find organizations that can answer questions and provide printed or electronic information on voice and voice disorders:

- ▶ Papillomatosis
- ▶ Spasmodic dysphonia
- ▶ Speech-language pathologists

### More NIDCD fact sheets on Voice, Speech, and Language:

- ▶ Dysphagia
- ▶ Hoarseness
- ▶ Recurrent Respiratory Papillomatosis
- ▶ Spasmodic Dysphonia
- ▶ Vocal Fold Paralysis


Visit the NIDCD website at <http://www.nidcd.nih.gov> to read, print, or download fact sheets.

For more information, additional addresses and phone numbers, or a printed list of organizations, contact us at:

### NIDCD Information Clearinghouse

1 Communication Avenue  
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Fax: (301) 770-8977  
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<http://www.nidcd.nih.gov>

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**The NIDCD supports and conducts research and research training on the normal and disordered processes of hearing, balance, taste, smell, voice, speech, and language and provides health information, based upon scientific discovery, to the public.**



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