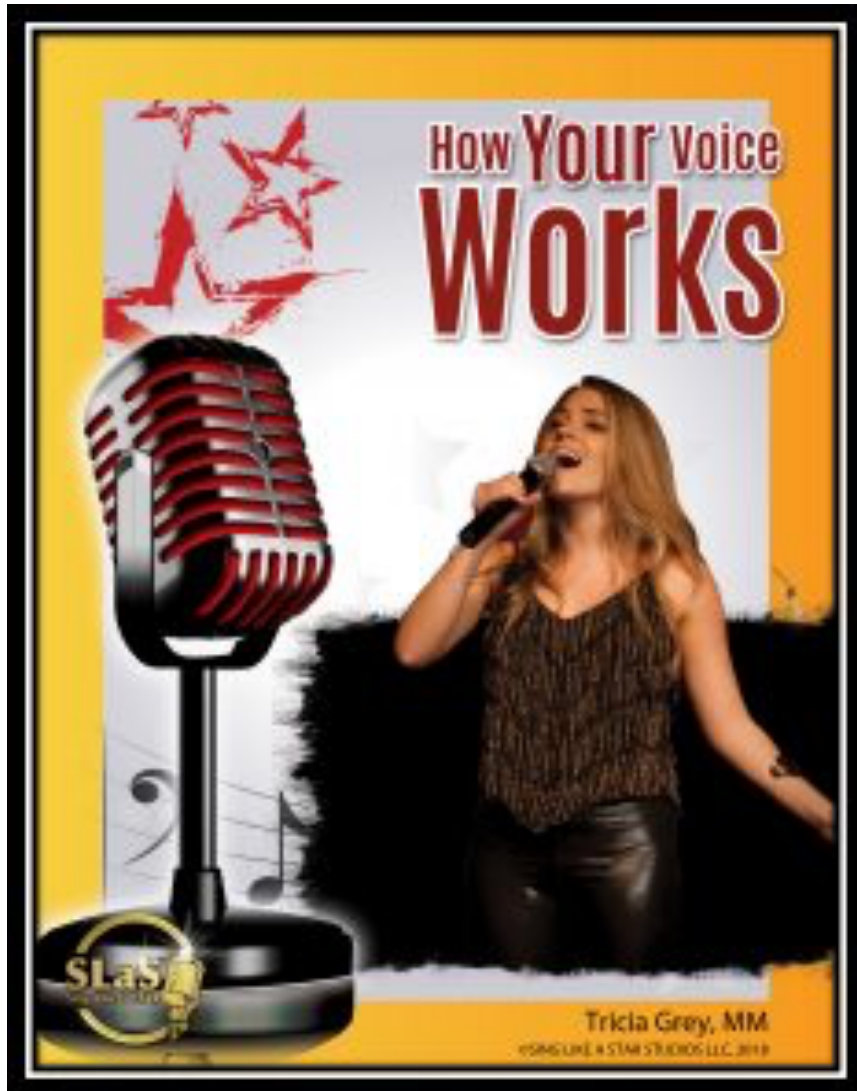


HOW YOUR VOICE WORKS: VOCAL DISORDERS AND VOCAL HEALTH



“The flame that burns twice as bright burns half as long.”
Lao Tzu

Some singers believe that hoarseness is just part of the life of a professional singer. You can expect to be vocally tired after a long performance, but ongoing hoarseness might be a sign of vocal issues.

A singer who experiences hoarseness for longer than two weeks, or any of the other indications of vocal trauma listed below, should schedule a visit to an ENT or otolaryngologist to be scoped-

(undergo stroboscopy, preferably rigid stroboscopy) before continuing with lessons or singing engagements.

The most common result of vocal trauma is vocal fold lesions. Vocal fold lesions are noncancerous (benign), abnormal growths within or along the covering of the vocal fold.

Lesions are thought to arise following overuse or traumatic use of the voice, including speaking at an improper pitch, speaking excessively, screaming or yelling, or using the voice excessively while sick, or singing with poor vocal technique.

Swelling of the vocal folds due to illness, fatigue, or poor vocal technique prevents midline vocal fold closure.

Manifestations of trauma such as nodules, polyps, and hemorrhages are the result of extended vocal abuse and make midline closure impossible.

Most vocal disorders such as cysts, nodules, polyps, and hemorrhages happen because of repeated trauma to the vocal folds.

Less often, but still a possibility, are issues presenting after a single event, such as screaming at an outdoor football game or singing for an evening when the vocal folds are compromised and swollen.

Singing too loudly, too long, or with too much air pressure will result in edema, or swelling of the folds, which then leads to further trauma if not addressed by vocal rest, rehabilitation, and better vocal technique.

Most disorders, once manifested, tend to reoccur unless vocal habits are radically changed. Singers need to attack the problem on several fronts; vocal rest, retraining the voice with better vocal technique, speech therapy, and if all else fails, surgery.

Surgery should be viewed as the last option; in some cases, surgery can damage the fold. During surgery, part of the vocal fold tissue may be scraped away along with the growth; this will affect the quality of the voice. It might even destroy the ability to sing.

So it makes sense to avoid the problem in the first place. A change in voice quality and persistent hoarseness lasting more than two weeks are often the first warning signs of a vocal fold lesion.

Other symptoms can include:

- Vocal fatigue
- Unreliable voice
- Delayed voice initiation
- Low, gravelly voice
- Low pitch
- Voice breaks

- Airy or breathy voice
- Inability to sing high, soft notes
- Increased effort to speak or sing
- Hoarse and rough voice quality
- Frequent throat clearing
- Extra force needed to produce tone

The most common non-cancerous lesions of the vocal folds include: vocal fold nodules, polyps, and cysts.

The best preventive steps are:

- Develop and maintain good vocal technique. Singers should be taking a weekly voice lesson with a teacher who understands the concepts of mix and balanced registration and should vocalize daily to ensure good vocal function.
- Use caution regarding overuse of the voice. Do not shout or sing in loud or outdoor environments, limit the use of the voice in daily speaking or singing, don't push or force the voice, and do not sing or speak at all if there is any evidence of vocal fold swelling.
- Hoarseness or breathiness that lasts for more than two weeks may signal a voice disorder and should be followed up with an otolaryngologist or ENT.

NODULES

Nodules are benign (noncancerous) growths that are caused by vocal abuse.

Nodules typically occur in people who use their voice in an intense manner over an extended period. They are a natural response to increased trauma, similar to calluses on the hands.

Vocal abuse can be defined as strenuous practices such as yelling, over-singing, talking in loud environments, pulling the lower register too high, singing too hard or with too much air, and forcing the voice, all symptomatic of excessive air pressure.

Over time, repeated abuse of the vocal folds results in soft, swollen spots on each vocal fold. These spots eventually develop into harder, callous-like growths. The nodules become larger and stiffer as the vocal abuse continues.

Also known as nodes, nodules form just below the epithelial surface of the vocal folds.

Nodules begin as swelling and progress to a hardened, callous-like growth of tissue, appearing on one or both vocal folds. Nodules appear in the area of the folds where contact between the folds is most forceful.

They are often present on both folds, facing each other, at the midpoint of the vocal fold, creating a thickened epithelium and a thickened superficial lamina propria.

The calluses that form on the vocal folds prevent the folds from meeting at the midline, producing a gap and stiffening the mucosal tissue, causing irregular vibration and a raspy sound.

The quality of the voice may range from normal to breathy to very hoarse and strained.

Like other calluses, these lesions often diminish or disappear when overuse of the area is stopped.

The inability to sing high and soft notes is one of the hallmarks of nodules.

When the singer tries to sing high and soft, there is a delay in the onset of the sound, with an audible air escape, and then the sound starts abruptly.

Other indications include abnormal voice quality, limited pitch and volume, vocal fatigue, and discomfort when singing or speaking.

Treatment usually involves vocal rest, speech therapy, improved vocal technique, and retraining using therapeutic vocal techniques such as SOVT exercises. In advanced cases, surgery may be required.

Treatment is dependent upon the age and hardness of the nodules. Soft or young nodules often resolve on their own with rest and therapy; surgery, is usually not necessary.

However, hard or old nodules generally require surgical removal.

Removal of the nodules may temporarily solve the problem, but nodules tend to return as soon as a singer begins to sing again with his or her original vocal habits.

New vocal habits must be acquired and maintained for life if the singer wishes to avoid further issues. Surgery is useless unless the singer has a committed attitude toward changing the habits that created the issue in the first place.

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- Use caution regarding overuse of the voice. Do not shout or sing in loud or outdoor environments, limit the use of the voice in daily speaking or singing, don't push or force the voice, and do not sing or speak at all if there is any evidence of vocal fold swelling.
- Hoarseness or breathiness that lasts for more than two weeks may signal a voice disorder and should be followed up with an otolaryngologist or ENT.

POLYPS

Polyps are benign lesions of the larynx, located on the edge of the vocal folds, that prevent the vocal folds from meeting at the midline.

Polyps usually appear on only one vocal fold, as a swelling or bump, a stalk-like growth, or a blister-like lesion.

Most polyps are larger than nodules and may be called by other names, such as polypoid degeneration or Reinke's edema.

The best way to think about the difference between nodules and polyps is to think of a nodule as a callous and a polyp as a blister.

Polyps can interfere with voice production and may produce a hoarse, breathy voice that tires easily.

Polyps may be caused by long-term vocal abuse but may also occur after a single, traumatic event to the vocal folds, such as yelling at a concert. Long-term cigarette smoking, hypothyroidism, and GERD (acid reflux) may also cause polyp formation.

Other contributors include allergies, tense muscles, oversinging, talking loudly, shouting, in loud environments and outdoors (avoid cheerleading if you want to sing!), and drinking caffeine and alcohol (dehydrates the tissues of the body).

One of the cofactors in the cause of these lesions may be laryngeal reflux disease.

Polyps, like nodules, may respond to treatment but tend to reappear if vocal habits are not changed and permanently maintained.

Surgery is an option if the polyps do not respond to rest and vocal therapy.

Treatment includes rest, speech therapy and Improvement of vocal technique and retraining for singers, including decreasing air pressure and extrinsic muscle engagement, singing at lower volumes, appropriate vocal fold adduction, and refraining from pushing the voice or singing with excessive volume.

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- Use caution regarding overuse of the voice. Do not shout or sing in loud or outdoor environments, limit the use of the voice in daily speaking or singing, don't push or force the voice, and do not sing or speak at all if there is any evidence of vocal fold swelling.
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CYSTS

Cysts and polyps are sometimes confused.

A cyst is an air, fluid or semi-solid substance filled cavity that develops in soft tissues; a polyp is an abnormal growth of tissue, protruding from the mucous membrane.

Cysts are fluid or gel filled sacs that occur within the delicate layered structure of the vocal fold, interrupting the mucosal wave responsible for sound production.

Cysts often occur near the midportion of the vocal fold. The cyst can be located near the surface of the vocal fold or deeper, near the ligament of the vocal fold.

The cyst causes a portion of the vocal fold mucosa to become stiff, preventing normal vibration and affecting voice quality and ease of production.

The size and location of cysts affect the degree of disruption of vocal cord vibration and subsequently the severity of hoarseness or other voice problem.

Indications of a cyst forming may include abnormal voice quality, vocal fatigue, discomfort or pain associated with increased talking, interference with breathing, and a sense of something irritating in the throat that needs to be cleared or coughed away.

The sound of the voice ranges from normal to breathy to extremely rough and hoarse and often worsens with increased voice use.

As with vocal fold polyps and nodules, the size and location of vocal fold cysts affect the degree of disruption of vocal fold vibration and phonation.

Cysts may be reduced by simply reducing vocal fold impact for a time. However, they often require surgical removal and are sometimes so deeply embedded that they are impossible to remove.

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HEMORRHAGE

Hemorrhage is the result of the rupture of a blood vessel on the vocal fold that creates bleeding into the mucosal covering of the fold. The accumulation of blood under the surface of the vocal fold makes the fold stiff, making the vocal fold vibration more difficult.

The amount of the bleed can vary greatly but often it is large enough to prevent vibration of the affected vocal fold. Sometimes the bleed becomes encapsulated into a cyst or polyp.

Hemorrhage is typically an acute (sudden) event, and the voice may suddenly cut out or become weak, breathy, or rough. Indications may include a sudden decrease in voice quality, a loss of pitch range, loss of volume, and loss of vocal control.

A person experiencing a hemorrhage may suddenly be unable to produce a sound. This resolves over time as the blood accumulation subsides. Small hemorrhages may cause only slight changes in voice quality, which could go unnoticed.

A hemorrhage occurs either when there is sudden high impact or a prolonged traumatic impact to the vocal folds and is more likely to occur when the blood vessels are already more susceptible to hemorrhage.

This may happen when aspirin products (an anticoagulant) or alcohol (a vasodilator) are used and is more common in women during the menstrual cycle.

English pop singer Adele has been diagnosed with vocal fold hemorrhages and has had to cancel performances as a result.

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GRANULOMA

A granuloma is a benign growth that typically occurs in the posterior (back) part of the larynx, either directly on the vocal fold or on one of the mucosal surfaces nearby.

A lesion that is not directly on the vocal fold may not interfere with voice quality, but it can be very irritating and painful. A large enough lesion may obstruct the airway.

The growth may prevent glottal closure, causing vibration to be weak or non-existent. This could cause a weak or breathy voice, frequent breaks in the voice, or the lesion may interfere with vibration, causing a rough, irregular sound.

The voice may fatigue easily and become worse with continued use.

A granuloma is one of the body's ways of healing or protecting itself from an inflammatory or infectious process. It is believed to be related to an infectious process within the cartilage of the larynx.

Granulomas can occur in a number of ways, but most are related to some acute or chronic injury, such as trauma from intubation during surgery, an extended bout of coughing or other vocal trauma, chronic acid reflux GERD/LPRD, mild chronic trauma such as frequent throat-clearing, and poor vocal technique while singing.

Vocal fold trauma or impact will usually make the granuloma worse.

Loud or excessive talking, throat-clearing, coughing, grunting, and effortful vocal production can all cause the granuloma to grow larger.

Singer John Mayer has been diagnosed with granuloma and has recently undergone a second surgery. Surgery is often prescribed for granuloma.

However, recurrence of the granuloma is common, even after surgery. Here are some non-surgical treatments:

Anti-reflux medications are usually prescribed to eliminate burning from acid reflux. Dietary and lifestyle changes may alleviate GERD/LPRD.

A short course of steroids is prescribed to reduce the inflammation and, hopefully, the size of the granuloma.

Antibiotics are given to alleviate infection.

Speech therapy can identify sources of high vocal fold impact and teach techniques to reduce impact while talking.

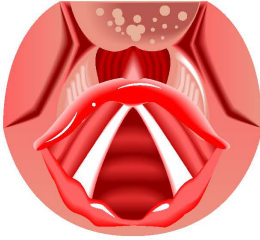
Rehabilitation of the singing voice with speech therapy and vocal technique that minimizes excessive air pressure.

The best preventive steps are:

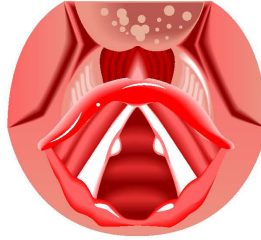
- Develop and maintain good vocal technique. Singers should be taking a weekly voice lesson with a teacher who understands the concepts of mix and balanced registration and should vocalize daily to ensure good vocal function.

- Use caution regarding overuse of the voice. Do not shout or sing in loud or outdoor environments, limit the use of the voice in daily speaking or singing, don't push or force the voice, and do not sing or speak at all if there is any evidence of vocal fold swelling.
- Hoarseness or breathiness that lasts for more than two weeks may signal a voice disorder and should be followed up with an otolaryngologist or ENT.

NODULES, CYST, POLYP HEMORRHAGE & GRANULOMAS

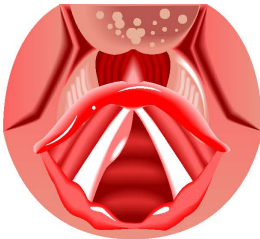


Normal Folds



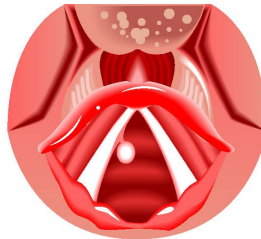
Nodules

Aka "Singers' Nodes": firm scar tissue, or calluses, that appear in pairs on both sides of the fold at the midpoint where repeated collision trauma is greatest.



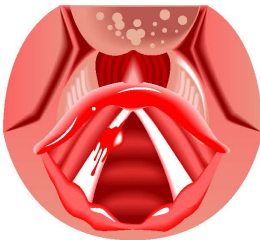
Cyst

Spherical or ovoid structures located deeper within the fold than nodules or polyps. They can be solid (keratin cyst) or filled with fluid (mucus retention cyst).



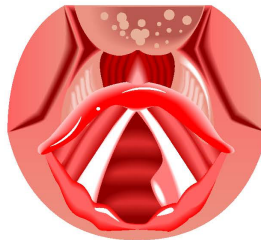
Polyp

Softer, more gelatinous than nodules. Polyps protrude from the free edge of the fold. They appear first on only one fold, but a reactive nodule may form at the contact point with the opposite fold.



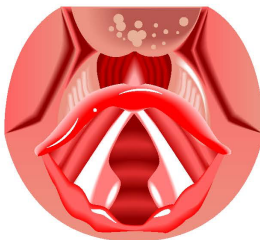
Hemorrhage

A polyp that has a leaking blood vessel (hemorrhage) within the fold, resulting in a hemorrhagic polyp



Granuloma

An inflammatory growth typically occurring on the back, or posterior, portion of the vocal folds, on either one side or both sides.



Granulomas

Bilateral granulomas due to intubation.

For more information about how your voice works please visit www.singlikeastar.com



DYSPHONIA

In general, the most common vocal complaint from adults is vocal strain (hyperkinetic dysphonia) from overuse of the vocal muscles while singing or speaking.

The voice tires quickly and lacks volume; talking against background noise becomes an effort. Symptoms of voice weakness and an aching throat improve with rest, but return as soon as the singer or speaker speaks or sings again.

Dysphonia is due to poor voice production and occurs often in tense individuals who speak or sing for a living.

Teachers, preachers, salesman, politicians, and telephone workers are all at increased risk.

Dysphonia caused by muscle strain can happen to singers (and speakers) who do not use correct breath management and *appoggio*; they tend to squeeze the extrinsic muscles surrounding the vocal tract as a result of poor breath support.

Working in a dry, hot, or polluted environment increases the problem.

MUSCLE TENSION DYSPHONIA

Muscle tension dysphonia occurs when excessive laryngeal muscle tension squeezes the vocal folds and surrounding muscles into a fist configuration, preventing air from moving through the vocal folds to enable normal vibration.

Indications include throat tightness, muscle aches in the neck while talking or singing, rough, hoarse voice that gets worse with continued use, throat or neck pain when talking, excessive use of the false vocal folds and surrounding supraglottic musculature, and persistent straining and pressing of the voice.

Nodules may also be present on the true vocal folds. The voice is reduced to a “squeaky” sound.

MTD occurs when the external laryngeal muscles are either too tight or are over-used in the speaking or singing voice.

When this happens, the vocal folds do not function properly.

Medications can also contribute to dysphonia: Inhaled steroids, testosterone, decongestants, antihistamines, anticoagulants, and some antipsychotics can be problematic.

These conditions respond to speech therapy with a qualified speech-language pathologist. Surgery is not indicated if the patient responds to speech therapy and if new habits of speaking are maintained.

Correct speaking and singing habits with relaxation of the laryngeal musculature with massage. Refraining from the medications listed above that may contribute to the issue.

ACID REFLUX

Acid reflux is a condition in which stomach acids rise into the esophagus because the valve that separates the stomach contents from the esophagus is faulty.

The stomach produces strong acids and enzymes (gastric juices) which are used in food digestion.

The inner lining of the stomach has several mechanisms to protect itself from the effect of the gastric juices, but the lining of the esophagus does not. The valve that stops the gastric juices from going up the esophagus is called the lower esophageal sphincter. The esophageal sphincter lies at the junction where the stomach and the esophagus join.

When the lower esophageal sphincter becomes weakened, gastric juices can seep upward into the esophagus.

Many people have acid reflux problems occasionally; in the majority of cases, this is harmless.

If the problem becomes persistent and goes untreated, heartburn can develop into GERD, Gastroesophageal Reflux Disease, a condition in which the stomach contents (food or liquid) leak backward from the stomach into the esophagus (the tube from the mouth to the stomach).

This action can irritate the esophagus, causing heartburn and other symptoms. In chronic and severe cases the esophagus can become scarred, leading to difficulty swallowing. In severe cases, the risk of developing cancer of the esophagus increases significantly.

Indications are:

- Asthma; gastric juices seep upwards into the throat, mouth and air passages of the lungs, making breathing difficult
- Chest pain
- Dental erosion due to acidic substances on the teeth
- Dysphagia – difficulty swallowing
- Heartburn – a burning feeling rising from the stomach or lower chest towards the neck
- Hoarseness
- Regurgitation – bringing food back up into the mouth. Reflux of acid into the larynx can have detrimental effects on the voice; when acid bathes the vocal folds and larynx, the tissues become red and inflamed, and singing becomes difficult. Individuals with acid reflux may have hoarseness and a persistent cough that can lead to vocal fold lesions. As the vocal folds begin to swell from acidic irritation their normal vibration is disrupted.
- Excessive throat clearing

Even small amounts of exposure to acid may be related to significant laryngeal damage.

This disruption in the vibratory behavior of the vocal folds will often produce a change in the singing or speaking voice. When a singer or speaker encounters an undesirable vocal sound the first impulse is to compensate, resulting in potentially abusive vocal behaviors.

This can exacerbate the original symptoms through excessive muscular tension and can eventually lead to the development of vocal fold pathologies.

Acid reflux may be caused by several factors including a hiatus hernia (malfunction of the stomach valve), obesity (being overweight), and poor eating habits, including night eating, overeating, and consuming food or drinks that promote stomach acid production, such as spicy, fatty, or fried foods, acidic foods (tomato sauce, orange juice), soda, coffee, tea, chocolate, mints, and alcohol.

Using tobacco products in any form promotes stomach acid production.

Lifestyle changes sometimes help prevent symptoms of gastroesophageal reflux disease, or GERD.

Because fatty foods, mints, chocolates, alcohol, nicotine, and caffeinated beverages such as coffee or colas relax the lower esophageal sphincter, sufferers may be able to reduce the amount of acid reflux they experience by avoiding these foods.

Carbonated drinks, citrus fruits and juices, spicy foods, and tomato sauce may irritate the lining of the esophagus and make the effects of GERD more severe. Cutting out these foods helps some people who have GERD.

Sufferers may help reduce reflux by quitting smoking, wearing loose clothing, eating smaller meals, not lying down for at least three hours after eating, and losing weight if overweight.

Some people can prevent symptoms at night by raising the head of their bed with 6-inch blocks or by sleeping on a special wedge-shaped pillow that elevates the upper part of the body.

Sleeping on the left side may also lessen symptoms.

Some medications, such as birth control pills and drugs for osteoporosis may cause reflux as a side effect. If drugs seem to be causing heartburn, talk with a doctor about alternative medications.

PRESBYLARYNGIS

Presbylaryngis is caused by deterioration and thinning of the muscles and tissues due to aging. The vocal folds have less bulk and therefore do not meet in the midline. As a result, the singer has a hoarse, weak, or breathy voice. This condition can be corrected by injection of fat or other material into both vocal folds to achieve better closure.

Daily vocalization can prevent many of the conditions associated with aging and preserve a youthful sounding voice well into the advanced years.

As a voice teacher, you should not take the risk of continuing to teach a student with ongoing (longer than two weeks) issues such as hoarseness and the inability to sing high and softly. The student may blame you for vocal problems resulting from their poor habits, and this will damage your reputation irretrievably. Insist they get a clean bill of health from a qualified otolaryngologist, and have them bring a picture of their pristine vocal folds to you.

A final note: singers who undergo surgery should insist on SMALL sized tubes for intubation. Let the docs know you are a singer- intubation can cause vocal fold trauma such as granuloma!

The following is a partial list of ENT doctors I know who specialize in the singing voice and are knowledgeable about vocal technique.

Atlanta:

Emory Voice Center
www.emoryhealthcare.org/voice-center
Emory University Hospital Midtown Medical Office Tower
9th Floor 550 Peachtree Street
Atlanta, Georgia 30308
404-686-1850

Los Angeles:

Dr. Rena Gupta
Osborne Head & Neck Institute
8631 W 3rd St, Suite 945E
Los Angeles, CA 90048
(310) 657-0123.

Chicago:

Dr. Stephen Sims, director of the Chicago Institute for Voice Care.
www.chicagovoicecare.com
(312) 996-6583
EMAIL: VOICECARE@UIC.EDU

Bountiful, Utah:

Dr. Curt Stock
1551 Renaissance Towne Drive
Suite 310
Bountiful, UT 84010
(801) 295-5581
(801) 295-9253

REHAB FOR DAMAGED VOICES

1. Rest

Rest and sleep are essential for singers to maintain vocal health. Lack of sleep produces edema or swelling of the tissues.

This means that, as the singer, unfortunately, you must skip the after-show party and go straight home to bed. If you want to preserve your voice, you must make rest a priority. This includes vocal rest- if you are rehearsing or performing you need to limit the amount of time you spend speaking during the day.

Think of having a limited vocal budget. The voice is not a machine- you can use it safely for only a certain number of hours per day and then you are cashed out. If you are singing a lot or singing loudly, you have even less cash in reserve.

Pace yourself. Use your voice as little as possible on the days you have a performance. Give yourself a vocal rest day after performances, and at least one day a week. Don't talk or sing all day.

Sound difficult? So is recovering from surgery!

2. Hydration

Drink two quarts of water per day, until you consistently “pee pale.” The vocal folds need to have some mucus on them to function efficiently, but we want thin rather than thick mucus. Lubrication is created in the vocal folds by drinking lots of water- at least 2 quarts per day.

Dr. Van Lawrence, a world-renowned ENT (ear, nose and throat specialist) has been credited with saying *Drink water until you pee pale.*

3. Exercise

Daily aerobic exercise is good for all the cells of the body including the vocal folds, and heart pumping deep breathing exercises help you stay in shape for performing.

4. Diet

Emphasize plenty of plain water, along with vegetables, fruits, and plant-based foods. Stay away from dairy, chocolate, and acid forming juices like orange juice which may create phlegm. Many people today are finding that they are gluten-intolerant and experience great improvements in health by avoiding gluten.

Any food item that causes your body to secrete phlegm should be avoided-phlegm is the body's way of reacting to a perceived toxin and inflammation. If you experience phlegm as a result of ingesting a particular food or drink your body is telling you to avoid it.

5. Avoid noisy environments

Don't talk loudly in noisy environments or try to be heard over the crowd at a party. Stay away from outdoor sporting events that encourage screaming. Don't even think about trying to be a cheerleader if you want to sing.

Screaming at one event has been known to cause vocal nodules. Is it really worth it? If you must attend an outdoor sporting event or rock concert, an occasional *WOO-EEE!* in the upper register should be ok. Do not scream or talk loudly, ever, but particularly in noisy outdoor environments.

6. Be aware of your speaking voice

You should be speaking in the area of the voice where you say *MMMM-HMMMMM* as if you are enthusiastically agreeing with someone. If you have to speak for long periods of time every day always use amplification. If you are a classroom teacher, this can save your voice! A portable cube amp with a microphone plugged in can easily travel with you anywhere you need to speak to a large group.

These little amps pack a large punch, and they are very small and easy to carry. Never raise your voice over large groups. If you direct musicals, working with large groups of excited singers, this tip could save your voice.

7. Protect your voice during long rehearsals

When I attended a final dress rehearsal at the Metropolitan Opera Company in New York, most of the singers were marking (singing at half volume or an octave lower), even with the hall fairly full of onlookers. These highly trained and powerful singers were saving their voices for the big event of the opening night.

The voice is a limited instrument and cannot be used at full volume for several hours every day as other instruments can. Do not allow yourself to be required by directors to sing full voice at every rehearsal. This will result in a less than stellar performance at opening night. Tell the director you are *marking*.

If you are in a rock band, resign yourself to the fact that you will never be able to sing louder or longer than an electric guitar. You can't out-sing electricity! Don't allow yourself to be tempted to push and scream during rehearsals or performances even when the onstage volume is loud. Which it always is, unfortunately.

Protect your fragile and irreplaceable instrument by refusing to sing too long or too loud. A guitar string can be replaced, but the vocal folds cannot be replaced. Even with vocal surgery, there is no guarantee your voice will ever return to a pristine condition.

And as soon as you start singing again with your prior habits, vocal problems come right back. If you want a long career, be smart about volume when singing and limit the time you spend singing full voice.

Even rock screamers know that, if you want to scream night after night in shows or while touring on the road, you have to do so at a moderate volume. You just have to make it LOOK like you are shredding your vocal folds- it's called acting.

Of course, a singer with good technique and training will be able to sing for longer periods of time than a singer who is not trained. Be sure to warm up the voice before rehearsals and to cool down after rehearsals with some semi-occluded exercises such as lip rolls or tongue trills.

8. Think Like an Athlete

An athlete warms up and cools down their muscles. A dedicated athlete knows they must exercise daily. They also know when to stop. They are disciplined about their body. When they are in training, they avoid all harmful substances. They value and respect their body because it is the source of their income. You should do the same.

For singers, exercising means vocalizing daily on scales and exercises that will encourage balanced registration and a good mix. You should vocalize enough each day to balance and develop the voice- but not so much that you get hoarse. Learn to pace yourself.

9. Gargling, Teas, Lozenges, Sprays

Though gargling does nothing for the vocal folds, gargling with salt water may help to soothe the tissues of the throat. Herbal teas such as Throat Coat (found at Whole Foods) contain slippery elm and may also be helpful for the throat (although, again, since these substances do not touch the vocal folds they won't minimize swelling of the folds).

Entertainer's Secret throat spray helps to moisturize the tissues of the throat. (To order, call 800-308-7452).

There is a natural throat spray called Sage Aloe Throat Shield Spray, made by Gaia Herbs, which can be purchased at Whole Foods. It contains Aloe Vera and is healing to the throat tissues. Thayer's makes a variety of lozenges made with slippery elm, as well as throat sprays.

To order, visit <http://www.thayers.com>. Their products are known as natural remedies. Rain, a mouth spray made with xylitol is moisturizing to the tissue of the mouth and throat and is a great resource if you tend to get a dry mouth when you are nervous!

Avoid caffeinated beverages, which dehydrate the folds.

10. Steaming and Irrigating

Steam or mist, if inhaled, will hydrate the vocal folds and help minimize swelling. I encourage singers to invest in a portable **facial steamer** (found at any drug store) and to inhale steam several times a day when dealing with swollen vocal folds. Make sure you clean and sanitize the unit daily-they develop unhealthy bacteria if you don't.

A larger device such as a humidifier or a vaporizer should be used while sleeping to increase hydration of the vocal folds and soothe swollen tissues.

A **nebulizer** is a small, portable device that converts liquid medicine into a fine mist you inhale by breathing through a mouthpiece or mask. A nebulizer (also known as a jet nebulizer or a compressed-air nebulizer) is powered by a small air compressor. You can purchase a saline solution to insert in the nebulizer.

This is a great way to hydrate the vocal folds; saline is healing and soothing to them. You can purchase these on Amazon.

I also recommend using a **neti pot** to clear out sinus cavities. The use of a neti pot requires mixing up a saline solution that will be poured through the nasal passages. Saline solution has been shown to be an effective treatment for hay fever, sinusitis, and other nasal conditions.

Nasal irrigation is used on a daily basis by many professional singers; the sinuses should be flushed daily to clear the cilia of bacteria and other pollutants. The neti pot looks like an Aladdin's lamp; the saline solution is poured into one nostril and comes out the other nostril.

You should not use tap water with this product; most tap water contains chlorine which can be irritating to the membranes of the nose. Use distilled water. You can purchase the neti pot on Amazon or at your local pharmacy.

THERAPEUTIC EXERCISES

When vocally fatigued, vocal rest is essential for recovery and to avoid further trauma to the vocal folds.

There are also specialized exercises that help with vocal fatigue- the Semi-Occluded Vocal Tract (SOVT) exercises.

These exercises are great for warming up the voice, for experiencing proper *appoggio*, and for reducing hyper-function (too much effort, tightness or constriction in the vocal tract) and for reducing vocal fatigue due to over-use of the voice.

The semi-occluded exercises reduce air flow through the vocal folds and provide a soothing and relaxing element to vocalization by un-pressing the folds. With semi-occluded exercises, you will find it easy to vocalize throughout your entire range. These exercises include lip rolls, tongue trills, certain voiced consonants such as Z, V, [ʒ], [θ], and straw phonation.

They can be done on slides, sirens, and scales, and should be repeated often throughout the day to keep the voice primed.

1. Lip rolls: lip rolls are made by blowing air across the lips as they are loosely vibrating or bubbling. Placing three fingers on either side of the cheeks along the line of the teeth can help to stabilize the vibrating lips. Press up slightly on the cheeks.

Although the lip roll may seem difficult to some singers at first, almost anyone can accomplish this exercise eventually. For those who have a hard time with the lip roll, a “raspberry” made by laying the tongue on the lower lip, closing the lips around the tongue, and blowing air usually works for just about anyone.

2. Tongue trills: tongue trills are the sound of a rolled R, and are made by flowing the air across a loose tongue tip. Many Romance languages such as Spanish and Italian use the rolled R.

3. Voiced Fricative Consonants: These include [θ] TH as in the word *the*, V as in the word *vibrant*, the softer [ʒ] as in the word *azure*, and Z as in the word *zebra*. These consonants tend to reduce air while maintaining steady air flow.

4. Straw Phonation: Using a small to medium sized stirring straw, insert the straw about a half-inch into the mouth. Close the lips completely and firmly around the straw. With an *UH* feeling in the throat do hills, first a small glide up and down, then higher, and then higher still. Finally, glide from very low to as high as you can. Keep the tongue relaxed and loose. Don't let air escape from the mouth area around the straw.

Dr. Ingo Titze, a world-renowned vocal scientist, advocates vocalizing through a small straw to soothe and heal tired or swollen vocal folds. Dr. Titze recommends straw phonation as an exercise for people with tired speaking voices, to help the voice recover; it works for tired singing voices as well.

He advocates doing slides and even vocalizing songs through the straw, which must be small enough to provide resistance.

The principle is to generate supraglottic (above the glottis) pressure so that the vocal folds can stretch and un-press. This reduces the load at the level of the larynx and can help to free up the muscles, so the singer gets used to using less vocal fold mass during phonation.

The increased back pressure decreases subglottic (under the glottis) pressure during phonation, allowing the vocal folds to achieve maximum stretch more easily. It also encourages a low laryngeal position, which allows the thyroid cartilage tilt necessary to stretch and elongate the vocal folds, eliminating flips and voice breaks.

Straw Phonation Routine:

- Pitch glide from your lowest to highest notes for 1-2 minutes.
- Glide up on “hills”, like progressively gunning an engine more and more. Be sure you are accenting from the lower body and not from the throat.
- Pick your favorite song and vocalize it through the straw.

For videos on the benefits of straw phonation, please visit www.ncvs.org.

THE SCIENCE BEHIND THE STRAW

These videos were created by Karen Titze Cox. More information can be found at www.ncvs.org.

5. Hand Over Mouth: If you place your hand over your mouth and vocalize, you will feel a back pressure that will soothe and stretch the vocal folds. This is effective for those who cannot do a lip roll or tongue trill.

6. Relaxation and Stretching: Take time throughout the day for relaxation and stretching exercises. Muscle massage using a small vibrator can also be very helpful in relaxing tension.

Tension is the enemy of good singing. Stretching can be extremely beneficial to counteract muscular tension.

For tongue tension, stick the tongue as far out of the mouth as possible, and then try to touch your nose, move it to the right, and finally to the left, holding each position for 5 seconds. Now draw a circle in the air with your tongue. This helps to disengage the muscles of the base of the tongue.

For neck tension, although the traditional head roll is not recommended, a good way to stretch the neck muscles is to bring your right ear toward the right shoulder and gently place the right hand on the left side of the face for a moment.

Repeat on the other side. Then bring the head forward, resting it on the collarbone and rest the hand on the back of the head.

Another great exercise to relax tense neck and back muscles is to stand and reach for the ceiling, then let the torso come down toward the floor in a rag doll folding motion.

Let the head hang straight toward the floor for at least a minute, then slowly come up, one vertebra at a time, with the head coming up last.

Now look to the right as far as possible, and then look to the left as far as possible. Repeat this process several times.

Then make extreme faces, widening the mouth and eyes as far as possible, then scrunching the muscles of the face together as small as possible.

The STRETCHING ROUTINE in Step One is a great way to start a lesson, or begin your day! The music is very soothing.

Massage the jaw hinge daily to release a tight jaw.

Massaging the muscles of the neck, under the chin, the jaw hinge, and face will also help to relax tense muscles, thereby alleviating or preventing vocal fatigue.

And never chew gum! Chewing gum over-develops and tightens the hinge muscles of the jaw, which need to be loose and flexible.

Since the body is a system, with all parts affecting the other parts, tension in the body can affect the vocal folds. Doing muscle stretching exercises and massage will keep the body relaxed and will have a positive effect on the vocal folds.

THE SPEAKING VOICE

“Silence is a source of great strength.”

“Those who know do not speak. Those who speak do not know.”

Lao Tzu

Average Speaking Range

Did you know that when you talk you are speaking on musical pitches? For speaking, the vibratory cycle is approximately:

Men: 110 cycles per second (Hz) (of course this varies and can be higher for tenors or lower for low basses).

Women: 180-220 cycles per second (Hz).

Children: 300 cycles per second (Hz).

The average speaking range drops with age; the average male at age 51 speaks around 110 Hz, and males at age 21 speak around 130 Hz. The average female at age 51 speaks at around 174 Hz; at age 21 she speaks at around 196 Hz.

Of course, smoking and alcohol abuse will drop these numbers significantly. For a great example of this, listen to comedienne Lucille Ball's voice in the early 1940s as opposed to the 1960s. Cigarettes and alcohol caused almost an octave drop in her speaking voice!

Weightlifters (male and female) who are considering taking steroids and hormones to aid in muscle development should know that these substances cause drastic changes in the voice over time; female bodybuilders often have the voices of men. These changes are irreversible.

OPTIMAL PITCH RANGE FOR SPEAKING

There is a distinction between the optimal or natural pitch range and the habitual pitch range used for speaking. If a speaker habitually uses a pitch range that differs from their optimal pitch range, the voice is not being used properly.

This can lead to vocal fatigue and can contribute to the development of vocal problems in singing.

Incorrect pitch in speaking can either be too high (chef Julia Child is an example of this), or it can be too low (Henry Kissinger is an extreme example of extremely low speech).

Most people fall between these two examples, but many people do not speak in their optimal pitch range. Finding your optimal pitch range for speaking can reduce wear and tear on your voice, can help preserve your singing voice, and help you present yourself with confidence and energy.

For the spoken voice to be healthy and vibrant, it also needs to be placed properly. The voice should be focused on the mask of the face- the area that includes the bridge of the nose, the mouth, and the lips.

A well-produced speaking voice has a good balance of oral-nasal and pharyngeal resonance- the same chiaroscuro or balance of bright and dark that creates a beautiful singing voice. Correct pitching and focus of the speaking voice will create a voice that is clear and resonant rather than guttural, breathy, nasal, or thin.

Your speaking voice is a large part of how you are perceived by others- a whiny, nasal voice can be irritating, a breathy, weak voice indicates a lack of confidence and a forced, strident voice can be off-putting to the listener.

Clear, energetic and dynamic voices create positive responses in a listener; weak, ineffective, guttural, raspy, or nasal speaking voices often create a negative psychological response in the listener that causes the speaker to be perceived in less than optimal ways.

Record yourself having a phone conversation. Is your recorded voice anything like your perception of your voice? Probably not. We are not equipped to hear ourselves as others hear us, so what we sound like and what we think we sound like are often two very different things.

You should pitch your speaking voice at about the area that you naturally produce sound when you enthusiastically say *MM- HMM* as if you are agreeing with someone enthusiastically, or say *MM-MM Good!* as if you just tasted something wonderful.

This phrase places the voice in the mask of the face, and if spoken enthusiastically is usually a few semi-tones higher than the normal pitch range. If performed correctly, you will feel vibrations due to sympathetic resonance in the nose and lips.

Next, follow an enthusiastic *MMM- MMM* with a phrase; for example, *MMM-HMM—how are you?*

If this pitch range differs substantially from the pitch, you typically use when speaking you are not at an optimal pitch and could be straining your voice to maintain a pitch that is too low or high.

For many people in western culture, the pitch on the *MMM-HMM* is higher than the normal speaking range; both men and women tend to speak on pitches that are too low.

Speaking at a pitch level that is too low, too high, or too breathy is tiring and can result in vocal damage.

Whispering

Never whisper when vocally tired.

You may believe that whispering when you are sick or tired will be restful to the voice, but that is not true; whispering pushes air across already compromised vocal folds and can cause further damage.

Practicing *MMM-HMM*, followed by phrases with an upbeat and positive approach will help you create a clear and well-pitched speaking voice.

If you find yourself becoming vocally tired from speaking all day, try repeating the following phrases periodically throughout the day to keep your voice well pitched and clear all day.

EXPERIENCE IT: OPTIMAL SPEAKING PITCH

Record yourself performing the following exercises. Note the difference in your speaking voice after the exercises are performed.

Try the following phrases, maintaining the feeling of placement you find with *MM-HMM*:

- *MMM-HMM- I am good!*
- *MMM-HMM- It's a Great Day!*
- *MMM-HMM- Onward and Upward!*

Notice that these phrases do not begin with voiceless consonants like “H” that cause breathiness but with vowels and consonants that tend to create vocal fold adduction

Now try:

- *MMM-HMM- Right!*
- *MMM-HMM- Really!*
- *MMM-HMM- Beautiful!*
- *MMM-HMM- 1-2-3-4-5!*
- *MMM-HMM- My name is _____!*
- *MMM-HMM- How are you?*

Now stand tall, with your arms stretched high overhead and repeat:

- *MMM-HMM- Right!*
- *MMM-HMM- Really!*
- *MMM-HMM- Beautiful!*
- *MMM-HMM- 1-2-3-4-5!*

- *MMM-HMM- My name is _____!*
- *MMM-HMM- How are you?*

Now, lower your arms to the sides, remember to breathe low, expanding the lower body, and repeat:

- *MMM-HMM- Right!*
- *MMM-HMM- Really!*
- *MMM-HMM- Beautiful!*
- *MMM-HMM- 1-2-3-4-5!*
- *MMM-HMM- My name is _____!*
- *MMM-HMM- How are you?*

Do this routine at the beginning of each day to get your voice warmed up and ready to speak. Repeat it several times a day to keep the correct pitch and placement.

Remember to breathe low! After performing the exercises, your voice will be more mixed, lighter, and less weighty. Practice reading aloud using these new techniques. Record yourself and listen back to your new and improved sound.

Poor breath support when speaking is a contributing factor to many vocal issues; breath support should be used in speaking, just as it is in singing.

Speakers need to apply the same breathing technique that singers use, expanding the lower body in a relaxed way with each inhalation.

To remind yourself to breathe correctly throughout the day, take a moment to place your hand over your belly button and inhale, allowing this area to expand easily. The chest and shoulders should be relaxed and should exhibit no observable motion during inhalation.

OTHER FACTORS AFFECTING THE SPEAKING VOICE

The same issues that are damaging to the singing voice will cause trauma to the speaking voice.

They are:

- Excessive volume and air pressure
- Pressed phonation and over-compression
- Overuse-speaking for too long at any one time, or forcing the voice to be heard in loud environments
- Breathiness: speaking with less than adequate vocal fold adduction
- Pitch- speaking too high or too low
- Acid Reflux- can damage the vocal folds
- Smoking
- Allergies
- Muscle tension leading to dysphonia

- Yelling at outdoor events and loud concerts
- Lack of sleep
- Lack of adequate hydration- not drinking enough water
- Alcohol, drugs
- Artificial hormones
- Continuing to stress the voice when it is compromised through illness or edema
- Toxins and pollutants in the environment
- Pollutants in drinking water
- Whispering
- Coughing and clearing the throat
- Aging
- Talking with constant vocal fry, in an unenergized and lethargic manner

Many vocal issues such as cysts, nodules, polyps, and hemorrhages happen because of repeated and ongoing trauma to the vocal folds.

Less often, but still a possibility, are vocal issues that present after a single event, such as screaming at an outdoor football game, or singing for an evening when the vocal folds are compromised and swollen.

Swelling of the vocal folds due to illness, fatigue, or poor vocal technique prevents midline vocal fold closure resulting in an imbalance in the system as air pushes through.

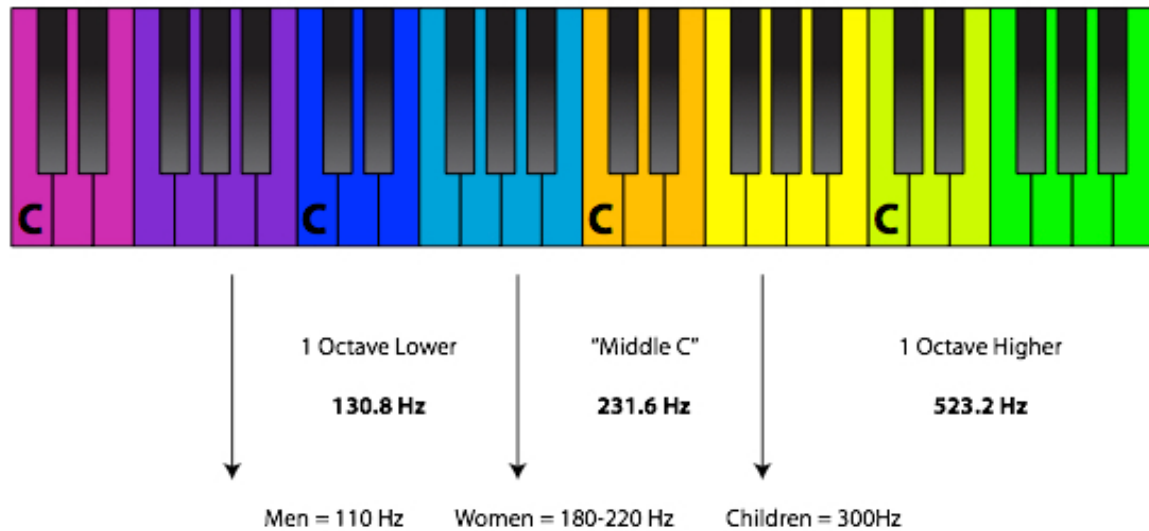
Manifestations of trauma such as nodules, polyps, and hemorrhages are the result of extended vocal abuse and make midline closure impossible.

Those who speak for a living (lawyers, classroom teachers, preachers) are prone to develop vocal fatigue and vocal fold swelling that can lead to disorders.

Your speaking voice announces who you are to the world. Take time each day to make sure that you are speaking in your optimal pitch range, with a clear, energized, and focused voice that is supported by a low breath.

When your speaking voice is produced correctly, you will present yourself in the best possible light while maintaining your vocal health and stamina.

TYPICAL SPEAKING RANGES IN HERTZ (Cycles per Second)



Vocal fatigue can be remedied by phonating on an octave slide through a straw. Raising the pitch level of your speaking is also helpful; try to speak in a slightly higher, more relaxed "mix" quality instead of allowing the voice to drop to the "basement" of your pitch range. Make sure the larynx is relaxed, by "sighing" from a high to a low pitch.

For more information about how your voice works please visit www.singlikeastar.com

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