What would you think of a top violinist who refused to allow long-needed repairs to his Stradivarius, because it would interfere with a tight performance schedule? Or a prima ballerina who ignored obvious signs of a foot fracture because she'd like to believe her pain was due to poorly fitting toe shoes?

You'd probably shake your head and think, “what fools these mortals be.” Yet classical singers, as a population, are sometimes just as remiss in seeking professional voice care when they experience chronic singing difficulties.

Robert Bastian, director of Loyola University Medical Center’s Voice Institute at Chicago’s Civic Opera House, conducted a study of 40 singers, and found that the mean time that singers waited to schedule first exams after the onset of their vocal symptoms was a shocking 33 months.

Why the delays? Singers and their teachers tend to attribute the vocal problems to “poor vocal technique,” “an undeveloped instrument,” or a “second-class vocal apparatus,” notes Bastian. Some also blame stress, fatigue, allergies, phlegm, and technical struggles for their complaints. But few allow for the possibility that their chronic voice difficulties may have a physical cause.

“The number one message I’d like to give singers is to be vigilant about self-detection and self-management,” says Bastian.

Take yourself seriously. Don’t be stoic. If you’ve had a voice problem that hasn’t resolved after 7-10 days, consider visiting a medical professional for evaluation, suggests Michael Benninger, chairman of the Otolaryngology Department at Henry Ford Hospital in Detroit and coauthor of Vocal Arts Medicine: The Care and Prevention of Professional Voice Disorders (Thieme Medical Publishers, 1994).

The sooner you seek help for your vocal problems, the more likely you’ll be able to remedy the difficulties. According to Bastian, if you allow vocal fold abnormalities to remain untreated for months or years, they may not totally resolve, even with highly skilled voice therapy, although they may improve a bit. Some even may require surgery.

The most common voice damage arises in singers who have “Show must go on, though I’m half-dead” personalities. They perform with laryngitis, and cause injury to their vocal folds, says David Hanson, chairman of the Department of Otolaryngology at Northwestern University Medical School in Chicago.

“This is very preventable,” he says. “But people are often tempted to try to sing when they shouldn’t, because they’re being paid to perform. The problem is, the voice is then affected for a longer period than if the singer had taken the time off.”

According to Benninger, singers most frequently complain about eight symptoms: hoarseness, vocal fatigue, breathiness, reduced range, aphonia (voice loss), pitch problems, vocal strain, and tremor. Many also report vocal difficulties like voice fatigue, irritation, and soreness after their performances.

How do most vocal fold injuries occur? The mucosa that covers your vocal folds is the main “moving part” in your larynx during singing. It’s designed to withstand millions of “collisions” each day, says Bastian. During an hour of continuous sound, your vocal fold mucosa collide about 792,000 times. If these
collisions are too forceful or the mucosa is infected or dry, the vocal folds may swell up, says Bastian. Usually, with rest, the swelling will disappear. But if you exacerbate this condition through vocal abuse or trauma, you could end up with a chronic problem and, in worst cases, a condition that can only be treated through surgery.


Be sure if you think something's amiss, you don’t too readily dismiss it.

As medical professionals will tell you, most vocal disorders are caused by misuse. But let’s destroy a harmful myth: they’re typically not caused by bad singing. Much more commonly, they’re caused by speech-related abuses, says John Eisenbeis, Associate Professor of Otolaryngology and director of the Voice Disorders Clinic at St. Louis University School of Medicine.

Here are some preliminary questions to ask yourself about your daily voice use:

- Are you allowing yourself adequate warm-up and cool-down? If not, you may be risking vocal strain, fatigue, and a decreased vocal range, notes Benninger.
- Are you a chatterbox? Voice overuse can cause sustained injury.
- Do you have a very hearty laugh? Loud laughter “snaps” the vocal folds open and closed. This can cause swelling.
- Do you often attend loud parties or speak in noisy environments? You may be straining your voice to be heard.
- Do you speak lower or higher than your normal voice range? Again, this can cause strain.
- Do you clear your throat or cough repeatedly? This can rupture blood vessels.
- Do you often find yourself in smoky environments? Second-hand smoke causes redness and irritation of your vocal mucosa and has a drying effect upon your vocal tract.
- Do you vocalize with “harsh glottal attacks”? Count from eighty to ninety. Are you forcefully pronouncing each starting vowel? This is called “glottal attack” and if it’s too forced, it can harm your vocal folds.

All of these factors can detrimentally affect your singing.

Voice misuse can cause soft swelling in your vocal folds. With rest, this can resolve in 24–48 hours. But in severe cases, vocal misuse can cause nodules (callous-like growths) to form on your vocal folds. Nodules often go undetected by singers because they may only affect the singing voice, not the speaking voice, says Bastian.

Symptoms of nodules include inability to sing high notes softly, increased breathiness, reduced vocal endurance, prolonged warm-ups, and day-to-day variability of vocal capabilities, says Bastian.

Unfortunately for half the population, this condition is almost exclusively found in females. Why?

Researchers don’t yet have the complete answer. But they theorize that this is because women’s vocal folds are thinner and vibrate many more times than do men’s.

Vocal trauma and abuse can result in hemorrhage, which may have serious consequences, says Sataloff. It can prompt the formation of a polyp (a projecting, swollen membrane) on the vocal fold. Although some polyps resolve after vocal therapy and rest, most require surgical excision. Scarring also can result from hemorrhaging, and this can cause permanent voice change. At present, there is no successful surgical technique to remedy this.

In most cases, hemorrhages will resolve on their own, says Sataloff. But singers who use their voices heavily—particularly those who are high sopranos—must take extra care not to tax their voices to the point where vocal fold hemorrhaging might occur.

**VIGILANCE IS KEY**

**Hoarseness**

Do you suffer from chronic hoarseness? Consider visiting a voice specialist for a check-up. Hoarseness may be caused by vocal fold scarring, lesions, and other abnormalities on the edge of the vocal folds that impede vibration. Why not have a physician rule out these diagnoses, rather than bravely singing on, risking the possibility that you’re permanently jeopardizing your voice?

**Reflux**

Singers as a group are particularly susceptible to this ailment,
Laryngoscope

because those who perform at night often eat large meals shortly before retiring. When these singers lie down to sleep, there is no gravity to move their stomachs' acidic contents toward their intestines. Instead, the acid may migrate upward to irritate the singer's esophagus and vocal folds. Drinking alcohol before bedtime further exacerbates this condition, because it inhibits the lower esophagus' muscle tone, notes Benninger.

Some singers experience symptoms of reflux the following morning. These can include scratchy throat, bitter taste, coated tongue, heartburn, and hoarseness (which may subside as the day progresses). They may feel its symptoms as they sit, stand, walk, or sing. Some may develop additional problems from the condition: repeated throat-clearing, excess phlegm, and a "lump-in-the-throat" feeling, said Sataloff. They also may require prolonged warm-up periods after a reflux bout.

Reflux can cause chronic inflammation of the voice box, which can, in some cases, lead to arthritis of the "cricoarytenoid joint" that controls the opening of your vocal folds, notes Sataloff, who also authored *Reflux Laryngitis and Related Conditions* (Singular Publishing Group, 2000). It also can delay healing of vocal lesions, Benninger says.

If you think you're suffering from reflux, don't ignore the problem. This condition can change your voice and, over years, cause serious damage to your esophagus.

Try to avoid dietary products that can worsen your symptoms, such as spicy foods, citrus products, peppermint, tomatoes, caffeine (in coffee, tea, and soft drinks), and alcohol. Eat smaller meals. Reduce your fat intake. Don't eat within three hours of bedtime. Raise your bed's headrest about six inches, so that gravity can help move food through your gastrointestinal tract. And, if your doctor permits, consider taking a dose of antacid at bedtime.

If your condition doesn't improve, visit a voice specialist and/or gastroenterologist. He or she may prescribe an H2 blocker or protein pump inhibitor to reduce your stomach acid production. You should see a marked reduction in symptoms within three to four weeks.

Respiratory Difficulties

Breathing through the nose warms, filters, and humidifies air before it reaches our lungs. When you suffer from respiratory tract infections, colds, or allergies, your nose stuffs up, and you may "mouth-breathe" as compensation. Try not to do this. Mouth-breathing permits unfiltered, unhumidified air to irritate and dehydrate your vocal fold mucosa.

If you live in a chilly climate, wear a warm hat and scarf when you go out, says Clark Rosen, director of University of Pittsburgh's Voice Center, and company physician for the Pittsburgh Opera. About 75% of body temperature loss occurs through your head. A hat will significantly reduce this, and a scarf will prevent cold air from irritating your voice box, Rosen adds.

Should you succumb to a cold, drink lots of water to rid your body of infection. Stay hydrated. It will reduce post-nasal drip and its resultant coughing and throat-clearing, says Rosen.

Once you've recovered from your cold, wait two days before singing, suggests Benninger.

Thyroid Problems

Our voices are affected by even slight changes in our hormone levels. If you've recently been feeling tired all the time, and have experienced hair loss, bloatedness, weight gain, hoarseness, intolerance of cold, and a "muffling" of your voice, you may wish to have your thyroid function checked by a physician. Hypothyroidism can cause these symptoms. About 4% of all adults have a form of thyroid disease, according to Benninger.

**VOICE IRRITANTS**

If you are highly allergic to dust, mold, or other irritants and you believe your singing is being affected by exposure to these substances, consider wearing a protective mask when you're near these substances. Be extremely cautious around artificial smokes and fogs, which Sataloff aptly calls a "deliberate form of air pollution."

Singers tend to be more affected by these substances than other stage performers and musicians because singers inhale air more deeply, and expel breath more slowly, notes Sataloff. The result is that toxic chemicals may remain in their lungs longer and in higher concentrations.

Although loved by audiences for their dramatic effect, some artificialsmokes and fogs are dangerous to singers because they contain toxic airborne chemicals. Glycol-based smokes and fogs, used in antifreeze products and to de-ice airplanes, can trigger allergic responses and even
induce anaphylactic shock, notes Sataloff.

Petroleum-based smokes and fogs in high concentration can cause lung problems because of a few of their inert mineral oils. They can “remain in the lungs indefinitely,” notes Sataloff. Inorganic smokes and mists that contain chlorides can release irritating ammonia and hydrochloric acid. And burned fragrances and dyes produce “toxic chemicals that should not be inhaled,” according to Sataloff. Even seemingly benign dry ice has been known to cause breathlessness, headaches, and fatigue in some singers, when inhaled in high concentrations.

HEALTH ADVICE

Dietary Tips

Our vocal folds do an enormous amount of work for us when we speak and sing. Because they vibrate against each other 100 to 1400 times a second, and require constant lubrication, it’s important that you drink lots of water throughout your day, and avoid caffeinated drinks that may cause dehydration or aggravate reflux, says Sataloff.

How do you know whether you’re properly hydrated? Excuse the candor, but monitor your urine output. If it’s pale, then you’re probably drinking enough water, says Bastian.

Some singers are adversely affected by milk and milk products. Their mucous secretions thicken and this can affect their singing performance. Others are negatively affected by alcohol. They develop chronic laryngitis from its intake. Avoid these beverages if you suffer from these symptoms.

Though achieving a healthy weight through proper diet and exercise is desirable, don’t attempt to lose weight abruptly through fasting or fad diets. Not only can that lead to voice fluctuations, but it can be extremely dangerous.

Medication Tips

Be vigilant when self-medicating and taking prescriptions. Even seemingly harmless over-the-counter drugs can affect your singing. Antihistamines, oral decongestants, and diuretics can dry and thicken secretions, causing your vocal folds to be more vulnerable to injury, note Sataloff and Bastian. Antidepressants can prompt these negative side effects, too.

Aspirin, which thins the blood, can cause vocal hemorrhaging, particularly if you take it while you’re prone to coughing. Some singers who are allergic to aspirin develop allergic laryngitis after ingestion, notes Benninger.

Although many health-conscious singers take vitamin and herbal remedies to treat various ailments, they must be extremely cautious, notes Jason Surow of the Northern Jersey Ear, Nose and Throat Associates. Some can make singers more vulnerable to hemorrhage, because of their blood-thinning effects, he says. These include dong quai, willow bark, primrose, garlic, vitamin E, gingko biloba, and ginger.

A few herbal remedies also can trigger hormonal responses that can alter your voice, notes Surow. These include dong quai (which increases ovarian and testicular hormonal production); yam (which contains progesterone-like chemicals); licorice root (which has estrogen- and progesterone-like effects); primrose (an estrogen promoter); melatonin.
(which plays a major role in estrogen/progesterone production); and yohimbe (which may increase testosterone production).

Some birth control pills also alter vocal range and character, says Sataloff. About 5% of women who take birth control pills undergo some voice change, he adds. Fortunately, in most cases, vocal changes are temporary. The voice returns to normal once the oral contraceptive use is discontinued, Sataloff says.

However, oral contraceptives and other medications that contain androgens are particularly worrisome, because they can permanently masculinize a woman’s voice. And birth control pills with high progesterone content can cause similar vocal problems, Sataloff notes. So if you are taking birth control pills, be sure they do not contain androgens or a high progesterone content. If you’re uncertain of your birth control pills’ ingredients, consult your physician, and regularly monitor your voice.

Traveling Tips

Airplane travel can be tough on singers. If you find yourself seated near a person who’s sneezing or nose-blowing, try to move to another seat. Minimize your speaking while in flight, and drink extra water. Noise levels on planes can reach 92 dB; trying to be heard over that din can greatly stress your voice.

New singers often get ill during traveling after being exposed to new allergens, or because they are overwhelmed by stress. If possible, they should schedule trips to include ample “rest time” before and after performances.

Vocal Training Tips

Keep learning! According to Benninger, one research study found nodules present in 60% of singers who had not received recent professional voice training. Other at-risk groups for nodules include singers who are suddenly thrust into technically challenging jobs without adequate training; singers who train sporadically; singers who tackle inappropriate repertoire (“like the baritone trying to sing the tenor’s high C’s in ‘Vesti la giubba,’” notes Sataloff); and singers who may switch teachers and suddenly find themselves required to vocalize very differently than before.

Menstrual Changes

Some female singers—as many as a third, according to Sataloff—report a loss in vocal proficiency before menstruation. This is because hormonal changes cause their vocal folds to swell. Their capillaries also become more fragile during this time. The result is “laryngopathia menstrualis”—a hoarseness that can adversely affect their performance. Women who have this condition may experience voice breaks, difficulty controlling upper range notes, fatigue, and also find themselves struggling with difficult pieces that, at other times, they had mastered.

In Europe, some opera groups offer “grace days” to affected singers and excuse them from performing. This practice is uncommon in the United States.

If you’re cramping or suffering from headaches around the time of menstruation, don’t take aspirin or ibuprofen. They can cause hemorrhaging in already fragile vocal folds. Instead, substitute acetaminophen or Celebrex®, suggests Sataloff.

Menopause

After menopause, a woman’s estrogen production virtually ceases,
but her ovaries continue to secrete androgens (male sex hormones). This is why some women over fifty have deeper voices than they did in their youth.

Postmenopausal singers sometimes complain of cracks in their voices, difficulty making transitions from chest to head voice, breathlessness, and an inability to support tones or sing certain scales and arpeggios fluently, notes Sataloff.

Such singers may want to consider hormone replacement therapy, after carefully weighing its pros and cons. They must bear in mind there exists a possibility that this therapy may increase a woman's risk of endometrial and breast cancer.

**Aging**

Older singers (from 40 on) undergo bodily changes that may affect their singing. Lungs lose elasticity, resulting in less breath support. Blood supply to the larynx decreases, stiffening the vocal folds. Muscular strength declines and, in some cases, coordination and reflexes slow down. These and other changes can cause reduced vocal range, increased wobble, loss of dynamic control, and decreased vocal depth and resonance, notes Benninger.

Before you get depressed about the sunset years, remember that, in the words of one researcher quoted by Benninger, "there are far more old people than 'old' voices." Vocal decline is not a necessary condition of age. In fact, with proper conditioning and training, many of these vocal difficulties may be reversible.

"With age, everyone has a voice change," says Benninger, "but for the trained vocalist, it shouldn't be very dramatic."

One problem with aging singers is that many tend to get out of "conservatory mode," says Bastian. Rather, they should commit themselves to regular coaching. "If anything, you have to be more disciplined at this point," he adds.

**Physical exercise is of paramount importance to the aging singer.** It can improve circulation, increase muscle tone, and even positively influence the neurological system. Because some vocal experts express concern about the impact of jogging upon the voice, older singers (and all others) should consider "softer" exercises like swimming and walking.

**A VISIT TO THE VOICE DOCTOR**

A competent voice specialist will evaluate your vocal pitch, loudness, and quality, and will closely question you about your daily voice use. Be sure to tell the physician about your practice schedules, hours spent singing, conditions under which you sing (e.g., large auditorium, noisy room), performance schedule, any possible exposure to irritants, recent illnesses, medications taken, and travel frequency.

Also mention how long you’ve had a problem; what symptoms you experience; and whether your vocal difficulties developed suddenly or slowly.

You can help the voice specialist detect changes in your voice by providing a high-quality audio or video recording of one of your best singing performances, so he or she can compare your singing abilities before, during, and after any therapy, suggests Bastian.

**ABOUT VOCAL REST**

Benninger quotes Shakespeare on this important subject: "Mend your voice a little, lest you mar your fortune."

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—William Warfield, internationally-renowned singer and teacher

SOME PARTING ADVICE

IF YOU BELIEVE YOU MAY BE MISUSING YOUR VOICE WHEN SPEAKING, consider getting formal speech training from a professional, such as a speech-language pathologist who specializes in helping vocalists.

IF YOU'VE BEEN DIAGNOSED AS HAVING NODULES, be sure to schedule periodic check-ups with your voice doctor, and visit a licensed speech-language pathologist for therapy.

IF YOU ARE CONSIDERING SURGERY, be sure you've exhausted all other vocal remedies. Doctors recommend that you try therapy for anywhere from six weeks to six months before undergoing surgical intervention. However, if you've undertaken voice therapy and have reached a plateau where you remain unhappy with your voice capabilities, then you may want to consider surgery as your next option, says Bastian.

Choose your surgeon carefully. Try to select a voice specialist who's successfully operated on many professional singers, and has published peer-reviewed papers on voice-related topics, says Sataloff. Don't be afraid to ask for your surgeon's curriculum vitae and to question the surgeon about his or her years in practice and fellowships. Remember, this person may operate on your livelihood. It's not a time to be shy.

“When in consultation with the surgeon, make it very clear that you are a singer relying on your voice for a livelihood and you can't afford any damage to your vocal cords,” says Hanson.

Discuss the risks of surgery with the physician whom you've chosen. They may include voice deterioration or a modest improvement below your expectations. Ask the physician whether he or she thinks your condition might reoccur even after surgery. And discuss how long your recuperation “down time” will be. Generally, singers can assume brief lessons with teachers two to six weeks after surgery. They are often able to return to public performance about 60-90 days after surgical procedures, says Sataloff.

There are two surgical techniques commonly used by physicians: laser and “cold instruments.”

Voice. Some singers worry that prolonged rest may cause “vocal cord atrophy,” but this isn't so, if “absolute voice rest” is undertaken for no more than two weeks. More likely, though, your vocal specialist will ask you to markedly reduce all vocalization activities during your recovery.

If you're told that you need to limit your vocal activities, consider canceling nonessential commitments, and “marking” during rehearsals, says Sataloff. Don't whisper or whistle, he adds. They can be as taxing to your vocal folds as singing.

Agrees Bastian, “I don't recommend [whispering]. People who whisper tend to graduate to a stage whisper, which is straining and effortful, and then to vocalizing.”

Also refrain from subvocalizing—reading silently with your lines—because, in a great many cases, you'll end up straining your vocal folds even more than you would by speaking softly in a normal voice.

When should you agree to total or “absolute voice rest”? When a physician has told you that you've suffered a mucosal tear or vocal hemorrhage, according to Sataloff. To prevent polyp formation, scarring, and other vocal fold injuries, you must give your voice time to heal. Absolute voice rest is typically prescribed for one week or less, says Sataloff.

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ments” (used in microdissection) are somewhat safer to use for singers. Laser surgery may leave a “divot” on the vocal fold, destroy healthy tissue, result in swelling, and/or cause a heat injury.

“I currently believe that microdissection may be safer than laser techniques, provided the surgeon is equally proficient in both,” says Bastian.

Sataloff recommends that, whenever possible, singers try to avoid procedures that require general anesthesia. This is because, although rare, placement of the breathing tube can cause complications including vocal fold edema, granuloma formation, dislocation of the voice box’s arytenoid cartilage, vocal fold paralysis, tooth damage, pneumonia, vocal fold hemorrhage, and reflux laryngitis. These complications can result from improper intubation, use of a wrong-sized endotracheal tube for breathing, or if the anesthetist discontinues anesthesia before removing the tube, which causes gagging or “bucking.” Occasionally, they can even occur when all procedures have been done correctly.

But if you must have a procedure requiring anesthesia, be sure to check your anesthesiologist’s credentials. Ask whether he or she has intubated professional singers before.

“If they look at you like they don’t have a clue, you may want someone else to do your anesthesia,” says Benninger.

Benninger also suggests that, before surgery, you ask your anesthetist whether he or she can use a smaller-than-average endotracheal tube for your procedure.

IF YOU’RE RECOVERING FROM A VOICE PATHOLOGY OR SURGERY, strictly follow your physician’s recommendations. You may not be able to perform for a specified time—anywhere between six weeks to six months, depending upon how severe your vocal fold damage was. If you’ve been told that you’ve been misusing your voice, you’ll need to refrain from performing until you’ve been able to correct your bad habits. Don’t rush back to the stage too soon—the stress of a performance might trigger your old habits and cause damage anew.

“Research and understanding of the voice is still infantile,” said Eisenbeis. “It’s similar to where we were with hearing and the ear in the 1950s and 1960s. But we’re generating a lot of new data about how the voice is produced.”

As researchers learn more about this amazing human feature, singers will benefit. They may gain prolonged vocal longevity, new ways to prevent injury, and improved treatments for their vocal afflictions.

But for now, treat your voice with great deference. It’s your Stradivarius. It will make brilliant music for you, if you listen when it speaks.

Susan Vaughn is a columnist for the Los Angeles Times, as well as a licensed emergency medical technician and certified emergency trauma technician.

SELF-SCREENING

Would you like to test yourself to see if you might have need for professional evaluation and treatment? Bastian recommends that you try the following three tasks:

TASK ONE: Sing the vowels /i/ and /e/ staccato at pianissimo dynamic level. Maintain precise rhythm and tempo. Keep the notes as short as possible.

TASK TWO: Sing the opening phrase of “Happy Birthday to You” at pianissimo dynamic level. Withhold vibrato. Sing this “boy soprano” style, and phonate softly.

TASK THREE: Softly sing half-step trills on the vowel /i/. Modulate your fundamental frequency back and forth as fast as you can, but without resorting to “wobbly vibrato.”

You may have vocal fold swelling if, when taking these tests:
• You can only sing upper notes loudly, with a great deal of support.
• You become tired and your voice grows husky after short singing bouts.
• Your upper register is “breathy”—there’s a faint sound of escaping air present most of the time or at the start of each new syllable as you go higher.
• The notes you sing have delayed onsets—a fraction of a second or longer passes between when you utter the sound and when it actually begins.