APPENDIX L

Medications and Their Effects on the Voice

The following list was compiled by Dr. Ingo Titze and the National Center for Voice and Speech (NCVS). It is reprinted with their permission. It was created with the aid of an experienced pharmacist and voice scientists of NCVS. The chart is provided as information only and is not meant to supersede a physician's counsel. All pharmacological choices should be done with consultation of one's doctor. See nvcs.org for more information.

Table AL.1. Medications and Their Effects on the Voice

Brand Name	Generic Name	Drug Class	Effects on Voice or Speech
Abilify	aripiprazole	atypical antipsychotic	No effects on voice or speech mechanisms have been reported.
Accolate	zafirlukast	antihistamine-leukotriene receptor antagonist	No effects on voice or speech mechanisms have been reported.
Accupril	quinapril	cardiovascular-ACE inhibitor	Excessive coughing has been associated with the use of ACE inhibitors, which, in turn, may lead to hoarseness and possibly vocal tissue damage.
Accutane	isotretinoin	antiacne-oral retinoid	Adverse mucocutaneous effects are frequently reported. Cheilitis (inflammation of the lips) occurs in more than 90 percent of patients and appears to be dose-related. Other mucocutaneous effects frequently encountered include xerosis, xerostomia, epistaxis, peeling, and pruritus. The mucocutaneous drying effects of isotretinoin are dose-related and are usually reversible following discontinuation.
Aciphex	rabeprazole	proton pump inhibitor	These agents have a favorable effect on the voice in that they reduce damage caused by gastroesophageal reflux disease (GERD). Uncontrolled acidic spillage of stomach acids into the larynx is harmful to delicate vocal fold tissues.
Actonel	risedronate	osteoporosis-bisphosphonate	Adverse effects with oral risedronate during the clinical trials were reported as generally mild and primarily affected the gastrointestinal system. The specific events reported were acid regurgitation (4.1 percent), including pyrosis (heartburn); flatulence (4.1 percent); gastroesophageal reflux disease (GERD) (0.7 percent); dyspepsia (3.4 percent); diarrhea (1.4 percent); abdominal pain (2.1 percent); and nausea (2.1 percent).
Actos	pioglitazone	antidiabetic-insulin sensitizer	No effects on voice or speech mechanisms have been reported.
Adalat CC	nifedipine	cardiovascular-CCB	No effects on voice or speech mechanisms have been reported.

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Table AL.1. Medications and Their Effects on the Voice (*continued*)

Brand Name	Generic Name	Drug Class	Effects on Voice or Speech
Adderall	amphetamine/ dextroamphetamine	stimulant	Adderall may have a drying effect on vocal fold tissues, which can lead to hoarseness, soreness, voice changes, and laryngitis. In addition, dry vocal tissues may be more prone to such injuries as nodules.
Advair-diskus	fluticasone and salmeterol	antiasthmatic-steroid/ bronchodilator	Patients using inhaled steroids sometimes experience voice changes (including complete loss of voice). The onset and severity of symptoms is highly variable among patients. Studies show that discontinuation of inhaled steroids restores the voice in dysphonic patients, but symptoms may not resolve immediately.
Aldactone	spironolactone	cardiovascular-diuretic	Diuretics have a drying effect on mucous membranes, including those used to speak and sing. Hoarseness, sore throat, voice changes, or laryngitis are possible symptoms. In addition to irritation effects, dry vocal folds may be more prone to such injuries as nodules.
Allegra	fexophenadine	antihistamine	Antihistamines have a drying effect on mucous membranes that may cause hoarseness, sore throat, voice changes, or laryngitis. In addition to irritation, dry vocal folds may be more prone to such injuries as nodules.
Altace	ramipril	cardiovascular-ACE inhibitor	Excessive coughing has been associated with the use of ACE inhibitors, which, in turn, may lead to hoarseness and possibly vocal tissue damage.
Amaryl	glimepiride	antidiabetic-sulfonylurea	No effects on voice or speech mechanisms have been reported.
Ambien	zolpidem	sedative/hypnotic	The use of sedatives may produce an uninhibited or diminished drive to speak. Symptoms of dysarthria (slow, slurred, and uncoordinated speech movements) may also be linked to sedative use.
Amoxil	amoxicillin	antibiotic-penicillin	In general, no effects on voice or speech mechanisms are associated with antibiotic use. It should be noted, however, that antibiotic abuse/misuse can lead to an overgrowth of Candida in the body, possibly leading to laryngeal thrush.
Antivert	meclizine	antihistamine	Antihistamines have a drying effect on mucous membranes that may cause hoarseness, sore throat, voice changes, or laryngitis. In addition to irritation, dry vocal folds may be more prone to such injuries as nodules.
Aricept	donepezil	cholinergic function enhancer for Alzheimer's patients	Infrequent voice and speech effects may include tongue edema, (swelling), pharyngitis (sore throat), and bronchitis.
Astelin	azelastine	antihistamine	Antihistamines have a drying effect on mucous membranes that may cause hoarseness, sore throat, voice changes, or laryngitis. In addition to irritation, dry vocal folds may be more prone to such injuries as nodules.
Ativan	lorazepam	antianxiety-benzodiazepine	Less than 1 percent of patients who take benzodiazepines experience slurred speech and symptoms of dysarthria (slow, uncoordinated speech).
Atrovent	ipratropium	antiasthmatic-bronchodilator	Inhaled bronchodilators sometimes dry or irritate tissues in the mouth and throat and may lead to hoarseness, soreness, voice changes, or laryngitis. Dry vocal tissues may be more prone to such injuries as nodules.

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Table AL.1. Medications and Their Effects on the Voice (*continued*)

Brand Name	Generic Name	Drug Class	Effects on Voice or Speech
Augmentin	amoxicillin clavulenate	antibiotic-penicillin	In general, no effects on voice or speech mechanisms are associated with antibiotic use. It should be noted, however, that antibiotic abuse/misuse can lead to an overgrowth of Candida in the body, possibly leading to laryngeal thrush.
Avapro	irbesartan	cardiovascular-AGII antagonist	Although excessive coughing has been associated with the use of ACE inhibitors and, to a lesser extent, AGII inhibitors, which may lead to hoarseness and possible vocal tissue damage, this effect has *not* been reported with the use of Avapro.
Avelox	moxifloxacin	antibiotic-fluoroquinolone	In general, no effects on voice or speech mechanisms are associated with antibiotic use. It should be noted, however, that antibiotic abuse/misuse can lead to an overgrowth of Candida in the body, possibly leading to laryngeal thrush.
Avodart	dutasteride	BPH-5 alpha reductase inhibitor	No effects on voice or speech mechanisms have been reported.
Axid	nizatidine	gastrointestinal-H2 blocker	Two effects exist: 1) The antihistamine component has a drying effect on mucous membranes that may cause hoarseness, sore throat, voice changes, or laryngitis. In addition to irritation, dry vocal folds may be more prone to such injuries as nodules. 2) However, this medication may benefit the voice if it is taken to reduce acidity of gastroesophageal reflux. Uncontrolled spillage of stomach acids into the larynx is harmful to delicate vocal fold tissues.
Azmacort	triamcinolone	antiasthmatic-steroid inhaled	Patients using inhaled steroids sometimes experience voice changes (including complete loss of voice). The onset and severity of symptoms is highly variable among patients. Studies show that discontinuation of inhaled steroids restores the voice in dysphonic patients, but symptoms may not resolve immediately
Bactrim	sulfamethox/trimethoprin	antibiotic-sulfa	In general, no effects on voice or speech mechanisms are associated with antibiotic use. It should be noted, however, that antibiotic abuse/misuse can lead to an overgrowth of Candida in the body, possibly leading to laryngeal thrush.
Bactroban	mupirocin	antibiotic	No effects on voice or speech mechanisms have been reported.
Benadryl	diphenhydramine	antihistamine	Antihistamines have a drying effect on mucous membranes that may cause hoarseness, sore throat, voice changes, or laryngitis. In addition to irritation, dry vocal folds may be more prone to such injuries as nodules.
Benicar	olmesartan	cardiovascular-AGII antagonist	An infrequently reported adverse reaction is coughing, which, in turn, may cause hoarseness and possible vocal tissue damage.
Bentyl	dicyclomine	antispasmotic	The following adverse effects are frequently associated with the use of anticholinergic agents like dicyclomine, at both therapeutic and subtherapeutic levels: blurred vision, cycloplegia, mydriasis, photophobia, anhidrosis, xerostomia (dry mouth), urinary retention, sinus tachycardia, palpitations, and constipation. Saliva substitutes may be administered to relieve dry mouth.

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Table AL.1. Medications and Their Effects on the Voice (*continued*)

Brand Name	Generic Name	Drug Class	Effects on Voice or Speech
Biaxin	clarithromycin	antibiotic-macrolide	In general, no effects on voice or speech mechanisms are associated with antibiotic use. It should be noted, however, that antibiotic abuse/misuse can lead to an overgrowth of Candida in the body, possibly leading to laryngeal thrush.
Boniva	ibandronate	osteoporosis-bisphosphonate	Adverse events of the digestive system were reportedly the most common reason for withdrawal from clinical trials of orally administered ibandronate. In addition to dyspepsia, other reported adverse events included constipation (2.5–4 percent), diarrhea (6.8 percent ibandronate vs. 5 percent placebo), esophagitis, gastritis (2.2 percent vs. 1.9 percent), pharyngitis (2.5 percent vs. 1.5 percent), and nausea/vomiting (2.7 percent vs. 2.1 percent).
Botox	botulinum toxin type A	onabotulinumtoxinA	Indicated for treatment of blepharospasms. Side effects can include increased incidence of upper respiratory tract infections, cough, bronchitis, and possible dry mouth.
Buspar	buspirone	antianxiety	No effects on voice or speech mechanisms have been reported.
Byetta	exenatide	antidiabetic-incretin mimetics	Other notable gastrointestinal events included diarrhea (13 percent vs. 6 percent placebo) and dyspepsia (6 percent vs. 3 percent placebo). Anorexia (reported as decreased appetite) and gastroesophageal reflux were also reported in 1–5 percent of patients and at a higher rate than placebo.
Caduet	amlodipine/atorvastatin	cardiovascular-CCB/statin	Calcium channel blockers like amlodipine should be used cautiously in patients with gastroesophageal reflux disease (GERD) or hiatal hernia associated with reflux esophagitis. The drugs relax the lower esophageal sphincter. Note that voice production can be adversely affected by GERD.
Calan	verapamil	cardiovascular-CCB	Calcium channel blockers like verapamil should be used cautiously in patients with gastroesophageal reflux disease (GERD) or hiatal hernia associated with reflux esophagitis. The drugs relax the lower esophageal sphincter. Note that voice production can be adversely affected by GERD.
Cardizem CD	diltiazem	cardiovascular-CCB	Calcium channel blockers like diltiazem should be used cautiously in patients with gastroesophageal reflux disease (GERD) or hiatal hernia associated with reflux esophagitis. The drugs relax the lower esophageal sphincter. Note that voice production can be adversely affected by GERD.
Cardura	doxazosin	cardiovascular-alpha blocker	No effects on voice or speech mechanisms have been reported.
Catapres	clonidine	cardiovascular-alpha agonist	No effects on voice or speech mechanisms have been reported.
Ceftin	cefuroxine	antibiotic-cephalosporin	In general, no effects on voice or speech mechanisms are associated with antibiotic use. It should be noted, however, that antibiotic abuse/misuse can lead to an overgrowth of Candida in the body, possibly leading to laryngeal thrush.
Cefzil	cefprozil	antibiotic-cephalosporin	In general, no effects on voice or speech mechanisms are associated with antibiotic use. It should be noted, however, that antibiotic abuse/misuse can lead to an overgrowth of Candida in the body, possibly leading to laryngeal thrush.

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Table AL.1. Medications and Their Effects on the Voice (*continued*)

Brand Name	Generic Name	Drug Class	Effects on Voice or Speech
Celebrex	celecoxib	analgesic-NSAID-COX 2 inhibitor	Less common gastrointestinal effects (0.1–1.9 percent incidence) that occurred with celecoxib regardless of causality included anorexia, constipation, diverticulitis, gastritis, gastroenteritis, gastroesophageal reflux disease (GERD), hemorrhoids, hiatal hernia, melena, stomatitis, and xerostomia.
Celexa	citalopram	antidepressant-SSRI	Increased cough and gastroesophageal reflux have been reported, both of which can adversely affect the voice. Asthma, laryngitis, bronchospasm, or sputum increase may rarely occur.
Chantix	varenicline	nicotine receptor agonist	Among the most common (> 5 percent, and twice the rate seen in placebo) adverse reactions to varenicline were constipation and flatulence. Other common adverse reactions (>= 1 percent and at least 0.5 percent more than placebo) included abdominal pain (including discomfort, tenderness, distension), anorexia, appetite stimulation, asthenia, dysgeusia, dyspepsia, dyspnea, gastroesophageal reflux, malaise, rhinorrhea, and xerostomia.
Cialis	tadalafil	ED-phosphodiesterase (PDE) type 5 inhibitor	No effects on voice or speech mechanisms have been reported.
Cipro	ciprofloxacin	antibiotic-fluoroquinolone	In general, no effects on voice or speech mechanisms are associated with antibiotic use. It should be noted, however, that antibiotic abuse/misuse can lead to an overgrowth of Candida in the body, possibly leading to laryngeal thrush.
Claritin	loratadine	antihistamine	Antihistamines have a drying effect on mucous membranes that may cause hoarseness, sore throat, voice changes, or laryngitis. In addition to irritation, dry vocal folds may be more prone to such injuries as nodules.
Cleocin	clindamycin	antibiotic	In general, no effects on voice or speech mechanisms are associated with antibiotic use. It should be noted, however, that antibiotic abuse/misuse can lead to an overgrowth of Candida in the body, possibly leading to laryngeal thrush.
Climara	estradiol	hormone-estrogen topical	No effects on voice or speech mechanisms have been reported.
Clomid	clomiphene	nonsteroidal fertility agent	No effects on voice or speech mechanisms have been reported.
codeine sulfate	codeine sulfate	analgesic-narcotic	Narcotics may produce an uninhibited or diminished drive to speak. Symptoms of dysarthria (slow, slurred, and uncoordinated speech movements) may also be linked to narcotic use.
Combivent	ipratropium/albuterol	antiasthmatic-bronchodilator	Inhaled bronchodilators sometimes dry or irritate tissues in the mouth and throat and may lead to hoarseness, soreness, voice changes, or laryngitis. Dry vocal tissues may be more prone to such injuries as nodules.
Concerta	methylphenidate	stimulant	Complaints of xerostomia or dysgeusia may be limited by sucking sugarless hard candy, crushed ice, and drinking plenty of water or other fluids.

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Table AL.1. Medications and Their Effects on the Voice (*continued*)

Brand Name	Generic Name	Drug Class	Effects on Voice or Speech
Coreg	carvedilol	cardiovascular-alpha and beta blocker	Beta blockers can cause bronchospasm, dyspnea, or wheezing in patients with asthma or pulmonary disease. Nonselective beta blockers like carvedilol are more likely than selective agents to precipitate bronchospasm. Patients with preexisting bronchospastic disease are at greater risk. Two cases of death from status asthmaticus have been reported in patients receiving single doses of carvedilol. Rare postmarketing reports describing interstitial pneumonitis associated with carvedilol therapy do exist.
Coumadin	warfarin	anticoagulant	Vocal performers, particularly, should be cautious about using medications that decrease platelet function during periods of strenuous voicing demands, due to an increased possibility of vocal fold hemorrhage.
Covera-hs	verapamil	cardiovascular-CCB	Calcium channel blockers like verapamil should be used cautiously in patients with gastroesophageal reflux disease (GERD) or hiatal hernia associated with reflux esophagitis. The drugs relax the lower esophageal sphincter. Note that voice production can be adversely affected by GERD.
Cozaar	losartan	cardiovascular-AGII antagonist	An infrequently reported adverse reaction is coughing, which, in turn, may cause hoarseness and possible vocal tissue damage.
Crestor	rosuvastatin	cardiovascular-statin	The manufacturer provides the following adverse events, which occurred in >= 2 percent of patients receiving rosuvastatin vs. placebo during premarketing trials (regardless of causality): pharyngitis (9 percent vs. 7.6 percent placebo), headache (5.5 percent vs. 5 percent), diarrhea (3.4 percent vs. 2.9 percent), dyspepsia (3.4 percent vs. 3.1 percent), nausea/vomiting (3.4 percent vs. 3.1 percent), muscle pain (2.8 percent vs. 1.3 percent), asthenia (2.7 percent vs. 2.6 percent), back pain (2.6 percent vs. 2.4 percent), flu-like syndrome (2.3 percent vs. 1.8 percent), urinary tract infection (2.3 percent vs. 1.6 percent), rhinitis (2.2 percent vs. 2.1 percent), and sinusitis (2 percent vs. 1.8 percent).
Cycrin	medroxyprogesterone	hormone-progestin	No effects on voice or speech mechanisms have been reported.
Cymbalta	duloxetine	antidepressant-serotonin–norepinephrine reuptake inhibitor	Pharyngitis has been frequently reported during duloxetine administration (9 percent vs. 5 percent placebo). In clinical trials, cough was reported in 3–6 percent of those on duloxetine versus 3 percent of those receiving placebo.
Darvocet-n	propoxyphene/ acetaminophen	analgesic-narcotic	Narcotics may produce an uninhibited or diminished drive to speak. Symptoms of dysarthria (slow, slurred, and uncoordinated speech movements) may also be linked to narcotic use.
Daypro	oxaprozin	analgesic-NSAID	Those who use their voices rigorously should be cautious about using medications that decrease platelet function during periods of strenuous voicing demands, due to an increased possibility of vocal fold hemorrhage.
Decadron	dexamethasone	steroid-glucocorticoid	Dexamethasone's effect is advantageous when used to shrink swollen vocal tissues, although patients taking dexamethasone should be carefully monitored by a physician. It is not advised for patients with vocal fold ulcers, hemorrhages, or acute laryngitis.

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Table AL.1. Medications and Their Effects on the Voice (*continued*)

Brand Name	Generic Name	Drug Class	Effects on Voice or Speech
Deltasone	prednisone	steroid-glucocorticoid	Prednisone's effect is advantageous when used to shrink swollen vocal tissues, although patients taking prednisone should be carefully monitored by a physician. It is not advised for patients with vocal fold ulcers, hemorrhages, or acute laryngitis.
Depakote	valproic acid	antiseizure	Anticonvulsants may produce an uninhibited or diminished drive to speak. Symptoms of dysarthria (slow, slurred, and uncoordinated speech movements) may also be linked to their use.
Desyrel	trazodone	antidepressant	No effects on voice or speech mechanisms have been reported.
Detrol	tolterodine	anticholinergic-overactive bladder	Adverse effects consistent with the actions of antimuscarinic agents and reported in < 1percent of patients treated with tolterodine in controlled clinical studies were confusion, gastroesophageal reflux, and flushing of the skin.
Diabeta	glyburide	antidiabetic-sulfonylurea	No effects on voice or speech mechanisms have been reported.
Diflucan	fluconazole	antifungal	No effects on voice or speech mechanisms have been reported.
Dilantin	phenytoin	antiseizure	Anticonvulsants may produce an uninhibited or diminished drive to speak. Symptoms of dysarthria (slow, slurred. and uncoordinated speech movements) may also be linked to their use.
Dilaudid	hydromorphone	analgesic-narcotic	Narcotics may produce an uninhibited or diminished drive to speak. Symptoms of dysarthria (slow, slurred, and uncoordinated speech movements) may also be linked to narcotic use.
Diovan	valsartan	cardiovascular-AGII antagonist	Excessive coughing has been associated with the use of ACE inhibitors or, to a lesser extent, AGII inhibitors, which, in turn, may lead to hoarseness and possibly vocal tissue damage.
Dolophine	methadone	analgesic-narcotic	Narcotics may produce an uninhibited or diminished drive to speak. Symptoms of dysarthria (slow, slurred, and uncoordinated speech movements) may also be linked to narcotic use.
Doryx	doxycycline	antibiotic-tetracycline	In general, no effects on voice or speech mechanisms are associated with antibiotic use. It should be noted, however, that antibiotic abuse/misuse can lead to an overgrowth of Candida in the body, possibly leading to laryngeal thrush.
Duragesic	fentanyl	analgesic-narcotic	Narcotics may produce an uninhibited or diminished drive to speak. Symptoms of dysarthria (slow, slurred, and uncoordinated speech movements) may also be linked to narcotic use.
Dyazide	hydrochlorothiazide/ triamterene	cardiovascular-diuretic	Diuretics have a drying effect on mucous membranes, including those used to speak and sing. Hoarseness, sore throat, voice changes, or laryngitis are possible symptoms. In addition to irritation effects, dry vocal folds may be more prone to such injuries as nodules.
Effexor	venlafaxine	antidepressant-serotonin–norepinephrine reuptake inhibitor	Effexor may have a drying effect on the body, including vocal fold tissues, which can lead to hoarseness, soreness, voice changes, or laryngitis. In addition, dry vocal tissues may be more prone to such injuries as nodules.

(*continued*)

Table AL.1. Medications and Their Effects on the Voice (*continued*)

Brand Name	Generic Name	Drug Class	Effects on Voice or Speech
Elavil	amitriptyline	antidepressant-TCA	Tricyclic antidepressants may affect coordination, including the speech production system. Slow or slurred speech may be observed. They also have a drying effect on vocal fold tissues, which can lead to hoarseness, soreness, voice changes, or laryngitis. In addition, dry vocal tissues may be more prone to such injuries as nodules.
Erytab	erythromycin	antibiotic-macrolide	In general, no effects on voice or speech mechanisms are associated with antibiotic use. It should be noted, however, that antibiotic abuse/misuse can lead to an overgrowth of Candida in the body, possibly leading to laryngeal thrush.
Eskalith	lithium	bipolar disorder-monovalent cation	Dry mouth may occur with lithium treatment. Slurred speech may indicate the need for dose adjustment.
Estrace	estradiol	hormone-estrogen	No effects on voice or speech mechanisms have been reported.
Estraderm	estradiol	hormone-estrogen topical	No effects on voice or speech mechanisms have been reported.
Estring	estradiol vaginal ring	hormone-estrogen	No effects on voice or speech mechanisms have been reported.
Fastin	phentermine	stimulant	Dry mouth may occur.
Fioricet	butalbital/APAP/caffeine	analgesic-barbiturate-pain combo	Narcotics may produce an uninhibited or diminished drive to speak. Symptoms of dysarthria (slow, slurred, and uncoordinated speech movements) may also be linked to narcotic use.
Flagyl	metronidazole	antibiotic	In general, no effects on voice or speech mechanisms are associated with antibiotic use. It should be noted, however, that antibiotic abuse/misuse can lead to an overgrowth of Candida in the body, possibly leading to laryngeal thrush.
Flexeril	cyclobenzaprine	antispasmotic	The use of muscle relaxers may produce an uninhibited or diminished drive to speak. Symptoms of dysarthria (slow, slurred, and uncoordinated speech movements) may also be linked to sedative use. Muscle relaxers may affect coordination, including the speech production system. Slow or slurred speech may be observed. They also have a drying effect on vocal fold tissues, which can lead to hoarseness, soreness, voice changes, or laryngitis. In addition, dry vocal tissues may be more prone to such injuries as nodules.
Flomax	tamsulosin	BPH-alpha blocker	The use of Flomax rarely causes pharyngitis (sore throat) or increased cough. Excessive coughing may lead to hoarseness and possible vocal tissue damage.
Flonase	fluticasone	antiallergy-steroid topical	Throat irritation and dryness, cough, hoarseness, and voice changes are all possible adverse reactions.
Flovent	fluticasone	antiallergy-steroid topical	Patients using inhaled steroids sometimes experience voice changes (including complete loss of voice). The onset and severity of symptoms is highly variable among patients. Studies show that discontinuation of inhaled steroids restores the voice in dysphonic patients, but symptoms may not resolve immediately.

(*continued*)

Table AL.1. Medications and Their Effects on the Voice (*continued*)

Brand Name	Generic Name	Drug Class	Effects on Voice or Speech
Fosamax	alendronate	osteoporosis-bisphosphonate	Adverse effects with alendronate during the clinical trials were reported as generally mild and primarily affected the gastrointestinal system. The specific events reported were acid regurgitation (4.1 percent), including pyrosis (heartburn); flatulence (4.1 percent); gastroesophageal reflux disease (GERD) (0.7 percent); dyspepsia (3.4 percent); diarrhea (1.4 percent); abdominal pain (2.1 percent); and nausea (2.1 percent).
Gardasil	HPV vaccine	vaccine	No effects on voice or speech mechanisms have been reported.
Geodon	ziprasidone	atypical antipsychotic	Dry mouth may occur.
Glucophage	metformin	antidiabetic-oral biguanide agent	No effects on voice or speech mechanisms have been reported.
Glucotrol	glipizide	antidiabetic-sulfonylurea	No effects on voice or speech mechanisms have been reported.
Humalog	insulin lispro	antidiabetic-insulin	No effects on voice or speech mechanisms have been reported.
Humulin-N	insulin isophane (human)	antidiabetic-insulin	No effects on voice or speech mechanisms have been reported.
Humulin-R	insulin regular	antidiabetic-insulin	No effects on voice or speech mechanisms have been reported.
Hydrodiurel	hydrochlorothiazide	cardiovascular-diuretic	Diuretics have a drying effect on mucous membranes, including those used to speak and sing. Hoarseness, sore throat, voice changes, or laryngitis are possible symptoms. In addition to irritation effects, dry vocal folds may be more prone to such injuries as nodules.
Hytrin	terazosin	cardiovascular-alpha blocker	No effects on voice or speech mechanisms have been reported.
Hyzaar	losartan/HCTZ	cardiovascular-AGII antagonist/diuretic	An infrequently reported adverse reaction is coughing, which, in turn, may cause hoarseness and possible vocal tissue damage. Diuretics have a drying effect on mucous membranes, including those used to speak and sing. Hoarseness, sore throat, voice changes, or laryngitis are possible symptoms. In addition to irritation effects, dry vocal folds may be more prone to such injuries as nodules.
Imdur	isosorbide mononitrate	cardiovascular-vasodilator	Voice-related effects may occur, including vocal tissue dryness (which, in addition to irritation effects, may be more prone to such injuries as nodules). Bronchitis, bronchospasm, and pharyngitis (sore throat) are other possible effects.
Imitrex	sumatriptan	antimigrane	No effects on voice or speech mechanisms have been reported.
Inderal	propranolol	cardiovascular-beta blocker	No effects on voice or speech mechanisms have been reported.
Indocin	indomethacin	analgesic-NSAID	Those who use their voices rigorously should be cautious about using medications that decrease platelet function during periods of strenuous voicing demands, due to an increased possibility of vocal fold hemorrhage.
Januvia	sitagliptin	antidiabetic-dipeptidyl-peptidase-IV (DPP-IV) inhibitors	No effects on voice or speech mechanisms have been reported.
Kariva	desogestrel/ethinyl estradiol	hormone-birth control	The use of oral contraceptives has not been shown to significantly affect female voices.

(*continued*)

Table AL.1. Medications and Their Effects on the Voice (*continued*)

Brand Name	Generic Name	Drug Class	Effects on Voice or Speech
Keflex	cephalexin	antibiotic-cephalosporin	In general, no effects on voice or speech mechanisms are associated with antibiotic use. It should be noted, however, that antibiotic abuse/misuse can lead to an overgrowth of Candida in the body, possibly leading to laryngeal thrush.
Keppra	levetiracetam	antiseizure	Anticonvulsants may produce an uninhibited or diminished drive to speak. Symptoms of dysarthria (slow, slurred, and uncoordinated speech movements) may also be linked to their use.
Klonopin	clonazepam	antianxiety-benzodiazepine	Less than 1 percent of patients who take benzodiazepines experience slurred speech and symptoms of dysarthria (slow, uncoordinated speech).
Klor Con	potassium chloride	supplement	No effects on voice or speech mechanisms have been reported.
Lamictal	lamotrigine	antiseizure	Anticonvulsants may produce an uninhibited or diminished drive to speak. Symptoms of dysarthria (slow, slurred, and uncoordinated speech movements) may also be linked to their use.
Lamisil	terbinafine	antifungal	No effects on voice or speech mechanisms have been reported.
Lanoxin	digoxin	cardiovascular-digitalis inotropic agent	No effects on voice or speech mechanisms have been reported.
Lantus	insulin glargine	antidiabetic-insulin	No effects on voice or speech mechanisms have been reported.
Lasix	furosemide	cardiovascular-diuretic	Diuretics have a drying effect on mucous membranes, including those used to speak and sing. Hoarseness, sore throat, voice changes, or laryngitis are possible symptoms. In addition to irritation effects, dry vocal folds may be more prone to such injuries as nodules.
Lescol	fluvastatin	cardiovascular-statin	No effects on voice or speech mechanisms have been reported.
Levaquin	levofloxacin	antibiotic-fluoroquinolone	In general, no effects on voice or speech mechanisms are associated with antibiotic use. It should be noted, however, that antibiotic abuse/misuse can lead to an overgrowth of Candida in the body, possibly leading to laryngeal thrush.
Levemir	insulin detemir	antidiabetic-insulin	No effects on voice or speech mechanisms have been reported.
Levitra	vardenafil	ED-phosphodiesterase (PDE) type 5 inhibitor	Gastrointestinal adverse reactions occurring in at least 2 percent of patients taking vardenafil film-coated tablets and more frequently than placebo included dyspepsia (4 percent vs. 1 percent) and nausea/vomiting (2 percent vs. 1 percent). Dyspepsia also occurred in 2.8 percent of patients receiving the orally disintegrating tablets. Gastrointestinal effects that occurred in less than 2 percent of patients included abdominal pain, diarrhea, dysphagia, esophagitis, gastritis, gastroesophageal reflux, vomiting, and xerostomia.
Levothroid	levothyroxine	hormone-thyroid replacement	No effects on voice or speech mechanisms have been reported.
Levoxyl	levothyroxine	hormone-thyroid replacement	No effects on voice or speech mechanisms have been reported.
Lexapro	escitalopram	antidepressant-SSRI	Xerostomia occurred in 4 percent of patients receiving 10 mg., versus 3 percent on placebo. Xerostomia (9 percent) at least doubled in incidence when the 20 mg. dose was utilized.

(*continued*)

Table AL.1. Medications and Their Effects on the Voice (*continued*)

Brand Name	Generic Name	Drug Class	Effects on Voice or Speech
Lipitor	atorvastatin	cardiovascular-statin	No effects on voice or speech mechanisms have been reported.
Lodine	etodolac	analgesic-NSAID	Those who use their voices rigorously should be cautious about using medications that decrease platelet function during periods of strenuous voicing demands, due to an increased possibility of vocal fold hemorrhage.
Lopid	gemfibrizil	cardiovascular-lipid reduction	No effects on voice or speech mechanisms have been reported.
Lopressor	metoprolol tartrate	cardiovascular-beta blocker	No effects on voice or speech mechanisms have been reported.
Lortab	hydrocodone/ acetaminophen	analgesic-narcotic	Narcotics may produce an uninhibited or diminished drive to speak. Symptoms of dysarthria (slow, slurred, and uncoordinated speech movements) may also be linked to narcotic use.
Lotensin	benazepril	cardiovascular-ACE inhibitor	Excessive coughing has been associated with the use of ACE inhibitors, which, in turn, may lead to hoarseness and possibly vocal tissue damage.
Lotrel	amolodipine/benazepril	cardiovascular-CCB/ACEi combo	Calcium channel blockers like amolodipine should be used cautiously in patients with gastroesophageal reflux disease (GERD) or hiatal hernia associated with reflux esophagitis. The drugs relax the lower esophageal sphincter. Note that voice production can be adversely affected by GERD. Excessive coughing has been associated with the use of ACE inhibitors, which, in turn, may lead to hoarseness and possibly vocal tissue damage.
Lotrisone	clotrimoxazole/ betamethasone	antifungal/steroid topical	No effects on voice or speech mechanisms have been reported.
Lovaza	omega-3-acid ethyl esters	omega-3 fatty acid	No effects on voice or speech mechanisms have been reported.
Lumigan	bimatoprost	antiglaucoma-synthetic prostamide	No effects on voice or speech mechanisms have been reported.
Lunesta	eszopiclone	sedative/hypnotic	The use of sedatives may produce an uninhibited or diminished drive to speak. Symptoms of dysarthria (slow, slurred, and uncoordinated speech movements) may also be linked to sedative use.
Lupron	leuprolide	hormonal antagonist	No effects on voice or speech mechanisms have been reported.
Lyrica	pregabalin	antiseizure	Anticonvulsants may produce an uninhibited or diminished drive to speak. Symptoms of dysarthria (slow, slurred, and uncoordinated speech movements) may also be linked to their use.
Macrobid	nitrofurantoin	antibiotic-nitrofuran	In general, no effects on voice or speech mechanisms are associated with antibiotic use. It should be noted, however, that antibiotic abuse/misuse can lead to an overgrowth of Candida in the body, possibly leading to laryngeal thrush.
Medrol	methylprednisolone	steroid-glucocorticoid	Methylprednisolone's effect is advantageous when used to shrink swollen vocal tissues, although patients taking methylprednisolone should be carefully monitored by a physician. It is not advised for patients with vocal fold ulcers, hemorrhages, or acute laryngitis.
Mevacor	lovastatin	cardiovascular-statin	No effects on voice or speech mechanisms have been reported.

(*continued*)

Table AL.1. Medications and Their Effects on the Voice (*continued*)

Brand Name	Generic Name	Drug Class	Effects on Voice or Speech
Miacalcin	calcitonin salmon	osteoporosis-calcitonin	Adverse reactions reported by 3 percent or more patients using intranasal calcitonin were rhinitis (12 percent), nasal symptoms (12 percent), epistaxis (3.5 percent), headache (3.2 percent), and sinusitis (2.3 percent). Nasal symptoms were the most commonly reported and cover a wide variety of symptoms, including crusting, nasal dryness, redness or erythema, infection, itching, nasal congestion, stenosis, and uncomfortable feeling and soreness across the bridge of the nose. Nasal irritation is mild to moderate in 95 percent of cases. Nasal symptoms were often only reported once and usually improved with continued use or discontinuation.
Micronase	glyburide	antidiabetic-sulfonylurea	No effects on voice or speech mechanisms have been reported.
Miralax	polyethylene glycol 3350	laxative-osmotic	No effects on voice or speech mechanisms have been reported.
Mirapex	pramipexole	antiparkinson-dopamine agonist	Dry mouth may occur.
Mirena	levonorgestrel-releasing intrauterine system	hormone-birth control	The use of oral contraceptives has not been shown to significantly affect female voices.
Mobic	meloxicam	analgesic-NSAID	Those who use their voices rigorously should be cautious about using medications that decrease platelet function during periods of strenuous voicing demands, due to an increased possibility of vocal fold hemorrhage. Less common gastrointestinal effects (< 1 percent incidence) that occurred with meloxicam regardless of causality included colitis; xerostomia (dry mouth); peptic ulcer disease (duodenal or gastric ulcer); eructation; gastritis; gastroesophageal reflux; gastrointestinal bleeding (hemorrhagic duodenal or gastric ulcer); hematemesis; melena; pancreatitis; gastrointestinal perforation (perforated duodenal or gastric ulcer, intestinal perforation); and stomatitis, including oral ulceration.
Monopril	fosinopril	cardiovascular-ACE inhibitor	Excessive coughing has been associated with the use of ACE inhibitors, which, in turn, may lead to hoarseness and possibly vocal tissue damage.
Motrin	ibuprofen	analgesic-NSAID	Those who use their voices rigorously should be cautious about using medications that decrease platelet function during periods of strenuous voicing demands, due to an increased possibility of vocal fold hemorrhage.
MS-Contin	morphine sulfate	analgesic-narcotic	Narcotics may produce an uninhibited or diminished drive to speak. Symptoms of dysarthria (slow, slurred, and uncoordinated speech movements) may also be linked to narcotic use.
Naprosyn	naproxen	analgesic-NSAID	Those who use their voices rigorously should be cautious about using medications that decrease platelet function during periods of strenuous voicing demands, due to an increased possibility of vocal fold hemorrhage.
Nasonex	mometasone	antiallergy-steroid topical	Throat irritation and dryness, cough, hoarseness, and voice changes are all possible adverse reactions. Oral or nasal candidiasis rarely occur.
Neurontin	gabapentin	antiseizure	Anticonvulsants may produce an uninhibited or diminished drive to speak. Symptoms of dysarthria (slow, slurred, and uncoordinated speech movements) may also be linked to their use.

(*continued*)

Table AL.1. Medications and Their Effects on the Voice (*continued*)

Brand Name	Generic Name	Drug Class	Effects on Voice or Speech
Nexium	esomeprazole	proton pump inhibitor	These agents have a favorable effect on the voice in that they reduce damage caused by gastroesophageal reflux disease (GERD). Uncontrolled acidic spillage of stomach acids into the larynx is harmful to delicate vocal fold tissues.
Nitrostat	nitroglycerin	cardiovascular-nitrate-vasodilation	No effects on voice or speech mechanisms have been reported.
Nolvadex	tamoxifen	hormone-antiestrogen	No effects on voice or speech mechanisms have been reported.
Norco	hydrocodone/ acetaminophen	analgesic-narcotic	Narcotics may produce an uninhibited or diminished drive to speak. Symptoms of dysarthria (slow, slurred, and uncoordinated speech movements) may also be linked to narcotic use.
Norvasc	amlodipine	cardiovascular-CCB	Calcium channel blockers like amlodipine should be used cautiously in patients with gastroesophageal reflux disease (GERD) or hiatal hernia associated with reflux esophagitis. The drugs relax the lower esophageal sphincter. Note that voice production can be adversely affected by GERD.
Nuvaring	etonogestrel/ethinyl estradiol vaginal ring	hormone-birth control	The use of oral contraceptives has not been shown to significantly affect female voices.
nystatin	nystatin	antifungal	No effects on voice or speech mechanisms have been reported.
Oxycontin	oxycodone	analgesic-narcotic	Narcotics may produce an uninhibited or diminished drive to speak. Symptoms of dysarthria (slow, slurred, and uncoordinated speech movements) may also be linked to narcotic use.
Paxil	paroxetine	antidepressant-SSRI	Paxil may have a drying effect on mucous membranes that can cause hoarseness, sore throat, voice changes, or laryngitis. In addition to irritation, dry vocal folds may be more prone to such injuries as nodules.
penicillin-vk	penicillin	antibiotic-penicillin	In general, no effects on voice or speech mechanisms are associated with antibiotic use. It should be noted, however, that antibiotic abuse/misuse can lead to an overgrowth of Candida in the body, possibly leading to laryngeal thrush.
Pepcid	famotidine	gastrointestinal-H2 blocker	Two effects exist: 1) The antihistamine component has a drying effect on mucous membranes that may cause hoarseness, sore throat, voice changes, or laryngitis. In addition to irritation, dry vocal folds may be more prone to such injuries as nodules. 2) However, this medication may benefit the voice if it is taken to reduce acidity of gastroesophageal reflux. Uncontrolled spillage of stomach acids into the larynx is harmful to delicate vocal fold tissues.
Percocet	oxycodone/ acetaminophen	analgesic-narcotic	Narcotics may produce an uninhibited or diminished drive to speak. Symptoms of dysarthria (slow, slurred, and uncoordinated speech movements) may also be linked to narcotic use.
Phenergan	promethazine	antinausea-phenothiazine	Antihistamines have a drying effect on mucous membranes that may cause hoarseness, sore throat, voice changes, or laryngitis. In addition to irritation, dry vocal folds may be more prone to such injuries as nodules.

(*continued*)

Table AL.1. Medications and Their Effects on the Voice (*continued*)

Brand Name	Generic Name	Drug Class	Effects on Voice or Speech
Plan-b	levonorgestrel	hormone-birth control	The use of oral contraceptives has not been shown to significantly affect female voices.
Plavix	clopidogrel	cardiovascular-platelet aggregation inhibitor	Those who use their voices rigorously should be cautious about using medications that decrease platelet function during periods of strenuous voicing demands, due to an increased possibility of vocal fold hemorrhage.
Plendil	felodipine	cardiovascular-calcium channel blocker	No effects on voice or speech mechanisms have been reported.
Pravachol	pravostatin	cardiovascular-statin	No effects on voice or speech mechanisms have been reported.
prednisone	prednisone	steroid-glucocorticoid	Prednisone's effect is advantageous when used to shrink swollen vocal tissues, although patients taking prednisone should be carefully monitored by a physician. It is not advised for patients with vocal fold ulcers, hemorrhages, or acute laryngitis.
Premarin	congugated estrogens	hormone-estrogen	No effects on voice or speech mechanisms have been reported.
Prempro	congugated estrogens/ medroxyprogesterone	hormone-estrogen/ progestin combo	No effects on voice or speech mechanisms have been reported.
Prevacid	lansoprazole	proton pump inhibitor	These agents have a favorable effect on the voice in that they reduce damage caused by gastroesophageal reflux disease (GERD). Uncontrolled acidic spillage of stomach acids into the larynx is harmful to delicate vocal fold tissues.
Prilosec	omeprazole	proton pump inhibitor	These agents have a favorable effect on the voice in that they reduce damage caused by gastroesophageal reflux disease (GERD). Uncontrolled acidic spillage of stomach acids into the larynx is harmful to delicate vocal fold tissues.
Prinivil	lisinopril	cardiovascular-ACE inhibitor	Excessive coughing has been associated with the use of ACE inhibitors, which, in turn, may lead to hoarseness and possibly vocal tissue damage.
Procardia	nifedipine	cardiovascular-calcium channel blocker	No effects on voice or speech mechanisms have been reported.
Prometrium	progesterone	hormone-progestin	No effects on voice or speech mechanisms have been reported.
Protonix	pantoprazole	proton pump inhibitor	These agents have a favorable effect on the voice in that they reduce damage caused by gastroesophageal reflux disease (GERD). Uncontrolled acidic spillage of stomach acids into the larynx is harmful to delicate vocal fold tissues.
Proventil	albuterol	antiasthmatic-bronchodilator	Inhaled bronchodilators sometimes dry or irritate tissues in the mouth and throat and may lead to hoarseness, soreness, voice changes, or laryngitis. Dry vocal tissues may be more prone to such injuries as nodules.
Provera	medroxyprogesterone	hormone-progestin	No effects on voice or speech mechanisms have been reported.
Provigil	modafinil	stimulant	Bronchospasm (i.e., asthma), dyspnea, epistaxis, pharyngitis, and rhinitis may occur.
Prozac	fluoxetine	antidepressant-SSRI	Prozac may have a drying effect on mucous membranes that can cause hoarseness, sore throat, voice changes, or laryngitis. In addition to irritation, dry vocal folds may be more prone to such injuries as nodules.

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Table AL.1. Medications and Their Effects on the Voice (*continued*)

Brand Name	Generic Name	Drug Class	Effects on Voice or Speech
Pulmicort-respules	budesonide	antiasthmatic-steroid inhaled	Patients using inhaled steroids sometimes experience voice changes (including complete loss of voice). The onset and severity of symptoms is highly variable among patients. Studies show that discontinuation of inhaled steroids restores the voice in dysphonic patients, but symptoms may not resolve immediately
Reglan	metoclopramide	antinausea-phenothiazine	Pseudoparkinsonism may develop, including bradykinesia, tremor, cogwheel rigidity, and mask-like facies. The parkinsonian-like symptoms generally subside within 2–3 months following the discontinuation of metoclopramide. Tardive dyskinesia has been reported with long-term and high-dose use and especially among patients being treated for longer than 3 months. Tardive dyskinesia includes such symptoms as repetitive and involuntary movements of the extremities, lip smacking, grimacing, tongue protrusion, rapid eye movements, blinking, puckering and pursing of the lips, or impaired movement of the fingers. The symptoms are often irreversible, and there is no known treatment. Tardive dyskinesia occurs more frequently in elderly patients, especially females. Although tardive dyskinesia is more likely to occur after prolonged therapy or high dosage, relatively brief therapy has been associated with this effect as well.
Relafen	nabumetone	analgesic-NSAID	Those who use their voices rigorously should be cautious about using medications that decrease platelet function during periods of strenuous voicing demands, due to an increased possibility of vocal fold hemorrhage.
Remeron	mirtazepine	antidepressant-piperazinoazepines	Dry mouth may occur.
Restoril	temazepam	sedative/hypnotic	The use of sedatives may produce an uninhibited or diminished drive to speak. Symptoms of dysarthria (slow, slurred, and uncoordinated speech movements) may also be linked to sedative use.
Rhinocort-Aqua	budesonide	antiallergy-steroid topical	Throat irritation and dryness, cough, hoarseness, and voice changes are all possible adverse reactions. Oral or nasal candidiasis rarely occur.
Risperdal	risperadone	atypical antipsychotic	Risperdal may have adverse effects on speech, including difficulty in articulating words.
Ritalin	methylphenidate	stimulant	Complaints of xerostomia or dysgeusia may be limited by sucking sugarless hard candy or crushed ice and drinking plenty of water or other fluids.
Robaxin	methocarbamol	antispasmotic	Muscle relaxants have a drying effect on mucous membranes that may cause hoarseness, sore throat, voice changes, or laryngitis. In addition to irritation, dry vocal folds may be more prone to such injuries as nodules. The use of sedatives may produce an uninhibited or diminished drive to speak. Symptoms of dysarthria (slow, slurred, and uncoordinated speech movements) may also be linked to sedative use.
Roxicodone	oxycodone	analgesic-narcotic	Narcotics may produce an uninhibited or diminished drive to speak. Symptoms of dysarthria (slow, slurred, and uncoordinated speech movements) may also be linked to narcotic use.
Septra	sulfamethox/trimethoprin	antibiotic-sulfa	In general, no effects on voice or speech mechanisms are associated with antibiotic use. It should be noted, however, that antibiotic abuse/misuse can lead to an overgrowth of Candida in the body, possibly leading to laryngeal thrush.

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Table AL.1. Medications and Their Effects on the Voice (*continued*)

Brand Name	Generic Name	Drug Class	Effects on Voice or Speech
Serevent	salmeterol	antiasthmatic-bronchodilator	Inhaled bronchodilators sometimes dry or irritate tissues in the mouth and throat and may lead to hoarseness, soreness, voice changes, or laryngitis. Dry vocal tissues may be more prone to such injuries as nodules.
Seroquel	quetiapine	atypical antipsychotic	Among the most frequent adverse events associated with the use of quetiapine is xerostomia. In clinical trials for schizophrenia, xerostomia was reported in 7 percent of patients receiving immediate-release quetiapine. In clinical trials of immediate-release quetiapine, rhinitis was reported in 3 percent of patients treated with quetiapine, and it was among the adverse effects that occurred in more than 2 percent of patients treated with the active drug and was reported more frequently than in placebo-treated patients. Treatment-emergent adverse effects as reported in clinical trials of patients with bipolar depression, which occurred in at least 5 percent of patients and with an incidence greater than placebo, included nasal congestion (5 percent vs. 3 percent).
Serzone	nafazodone	antidepressant	No effects on voice or speech mechanisms have been reported.
Sinemet	carbidopa/levodopa	anti-Parkinson-dopamine agonist	Dyskinesia and sporadic movements are the most common of the serious effects of carbidopa; levodopa therapy can include choreiform reaction and dystonic reaction. These effects occur in up to 80 percent of patients receiving levodopa therapy for >= 3 years. Involuntary movements, including chewing, bruxism, gnawing, twisting, protrusion of the tongue, opening and closing the mouth, bobbing of the head, rhythmic movements of the feet or hands, quick movements of the shoulder, and ballismus, have been reported and may necessitate dosage reduction. Blepharospasm (which may indicate toxicity), muscle twitching, ataxia, myoclonia during sleep, and hand tremor also have been reported.
Singulair	montelukast	antiasthmatic-leukotriene receptor antagonist	No effects on voice or speech mechanisms have been reported.
Skelaxin	metaxalone	antispasmotic	No effects on voice or speech mechanisms have been reported. The use of sedatives may produce an uninhibited or diminished drive to speak. Symptoms of dysarthria (slow, slurred, and uncoordinated speech movements) may also be linked to sedative use.
Soma	carisoprodol	antispasmotic	No effects on voice or speech mechanisms have been reported. The use of sedatives may produce an uninhibited or diminished drive to speak. Symptoms of dysarthria (slow, slurred and uncoordinated speech movements) may also be linked to sedative use.
Spiriva	tiotropium	anticholinergic-COPD	The incidence of xerostomia with tiotropium use is roughly 10 percent. As with most anticholinergic agents, constipation may occur if significant amounts of tiotropium are absorbed. Postmarketing reports indicate that other gastrointestinal-related effects have occurred, including dysphagia, epistaxis, hoarseness, gastrointestinal obstruction (e.g., paralytic ileus), oral candidiasis, and throat irritation, although the exact incidences of these adverse reactions have not been established.
Strattera	atomoxetine	stimulant	Dry mouth may occur.

(*continued*)

Table AL.1. Medications and Their Effects on the Voice (*continued*)

Brand Name	Generic Name	Drug Class	Effects on Voice or Speech
Suboxone	buprenorphine/naloxone	analgesic-narcotic	Narcotics may produce an uninhibited or diminished drive to speak. Symptoms of dysarthria (slow, slurred, and uncoordinated speech movements) may also be linked to narcotic use.
Sumycin	tetracycline	antibiotic-tetracycline	In general, no effects on voice or speech mechanisms are associated with antibiotic use. It should be noted, however, that antibiotic abuse/misuse can lead to an overgrowth of Candida in the body, possibly leading to laryngeal thrush.
Synthroid	levothyroxine	hormone-thyroid replacement	No effects on voice or speech mechanisms have been reported.
Tagamet	cimetidine	gastrointestinal-H2 blocker	Two effects exist: 1) The antihistamine component has a drying effect on mucous membranes that may cause hoarseness, sore throat, voice changes, or laryngitis. In addition to irritation, dry vocal folds may be more prone to such injuries as nodules. 2) However, this medication may benefit the voice if it is taken to reduce acidity of gastroesophageal reflux. Uncontrolled spillage of stomach acids into the larynx is harmful to delicate vocal fold tissues.
Tamiflu	oseltamivir	antiviral	No effects on voice or speech mechanisms have been reported.
Tegretol	carbemazepine	antiseizure	Anticonvulsants may produce an uninhibited or diminished drive to speak. Symptoms of dysarthria (slow, slurred, and uncoordinated speech movements) may also be linked to their use.
Tenormin	atenolol	cardiovascular-beta blocker	No effects on voice or speech mechanisms have been reported.
Tiazac	diltiazem	cardiovascular-calcium channel blocker	No effects on voice or speech mechanisms have been reported.
Timoptic	timolol ophthalmic	antiglaucoma-beta blocker	No effects on voice or speech mechanisms have been reported.
Topamax	topiramate	antiseizure	Anticonvulsants may produce an uninhibited or diminished drive to speak. Symptoms of dysarthria (slow, slurred, and uncoordinated speech movements) may also be linked to their use.
Toprol-XL	metoprolol succinate	cardiovascular-beta blocker	No effects on voice or speech mechanisms have been reported.
Toradol	ketorolac	analgesic-NSAID	Those who use their voices rigorously should be cautious about using medications that decrease platelet function during periods of strenuous voicing demands, due to an increased possibility of vocal fold hemorrhage.
Treximet	sumatriptan/naproxen	migraine treatment	Those who use their voices rigorously should be cautious about using medications that decrease platelet function during periods of strenuous voicing demands, due to an increased possibility of vocal fold hemorrhage.
Tricor	fenofibrate	cardiovascular-fibrate	No effects on voice or speech mechanisms have been reported.
Trileptal	oxcarbazepine	antiseizure	Anticonvulsants may produce an uninhibited or diminished drive to speak. Symptoms of dysarthria (slow, slurred, and uncoordinated speech movements) may also be linked to their use.

(*continued*)

Table AL.1. Medications and Their Effects on the Voice (*continued*)

Brand Name	Generic Name	Drug Class	Effects on Voice or Speech
Trusopt	dorzolamide ophth sol	antiglaucoma	The possibility of systemic adverse reactions to dorzolamide is small, but there have been occasional reports of headache, nausea, asthenia, fatigue, skin rash, and urolithiasis. Contact dermatitis, xerostomia (dry mouth), epistaxis, and throat irritation have been reported during post-market surveillance.
Tussionex	hydrocodone/guaifenesin	analgesic-narcotic	Narcotics may produce an uninhibited or diminished drive to speak. Symptoms of dysarthria (slow, slurred, and uncoordinated speech movements) may also be linked to narcotic use.
Tylenol	acetaminophen	analgesic	No effects on voice or speech mechanisms have been reported.
Tylenol-codeine	acetaminophen/codeine	analgesic-narcotic	Narcotics may produce an uninhibited or diminished drive to speak. Symptoms of dysarthria (slow, slurred, and uncoordinated speech movements) may also be linked to narcotic use.
Ultracet	tramadol/acetaminophen	analgesic	No effects on voice or speech mechanisms have been reported.
Ultram	tramadol	analgesic	No effects on voice or speech mechanisms have been reported.
Valium	diazepam	antianxiety-benzodiazepine	Less than 1 percent of patients who take benzodiazepines experience slurred speech and symptoms of dysarthria (slow, uncoordinated speech).
Valtrex	valacyclovir	antiviral	No effects on voice or speech mechanisms have been reported.
vancomycin	vancomycin	antibiotic-glycopeptide	In general, no effects on voice or speech mechanisms are associated with antibiotic use. It should be noted, however, that antibiotic abuse/misuse can lead to an overgrowth of Candida in the body, possibly leading to laryngeal thrush.
Vasotec	enalapril	cardiovascular-ACE inhibitor	Excessive coughing has been associated with the use of ACE inhibitors, which, in turn, may lead to hoarseness and possibly vocal tissue damage.
Viagra	sildenafil	ED-phosphodiesterase (PDE) type 5 inhibitor	Adverse reactions affecting hearing or otic special senses and occurring in < 2percent of patients in controlled clinical trials of sildenafil included hearing loss, otalgia, and tinnitus. In addition, 29 reports of sudden changes in hearing, including hearing loss or a decrease in hearing, usually in 1 ear only, have been reported to the FDA during postmarketing surveillance in patients taking sildenafil, tadalafil, or vardenafil; the reports are associated with a strong temporal relationship to the dosing of these agents. The hearing changes are often accompanied by vestibular effects, including dizziness, tinnitus, and vertigo. Follow-up has been limited in many of the reports; however, in approximately one-third of the patients, the hearing loss was temporary. Concomitant medical conditions or patient factors may play a role, although risk factors for the onset of sudden hearing loss have not been identified. Patients should be instructed to contact their physician if they experience changes in hearing.
Vicodin	hydrocodone/ acetaminophen	analgesic-narcotic	Narcotics may produce an uninhibited or diminished drive to speak. Symptoms of dysarthria (slow, slurred, and uncoordinated speech movements) may also be linked to narcotic use.

(*continued*)

Table AL.1. Medications and Their Effects on the Voice (*continued*)

Brand Name	Generic Name	Drug Class	Effects on Voice or Speech
Vistaril	hydroxyzine	antihistamine	Antihistamines have a drying effect on mucous membranes that may cause hoarseness, sore throat, voice changes, or laryngitis. In addition to irritation, dry vocal folds may be more prone to such injuries as nodules.
Voltaren	diclofenac	analgesic-NSAID	Those who use their voices rigorously should be cautious about using medications that decrease platelet function during periods of strenuous voicing demands, due to an increased possibility of vocal fold hemorrhage.
Vytorin	simvastatin/ezetimibe	cardiovascular-statin/ lipid reduction	No effects on voice or speech mechanisms have been reported.
Vyvanse	lisdexamfetamine	stimulant	Dry mouth may occur.
Wellbutrin	buproprion	antidepressant-aminoketone	No effects on voice or speech mechanisms have been reported.
Xalatan	latanoprost	antiglaucoma-synthetic prostamide	No effects on voice or speech mechanisms have been reported.
Xanax	alprazolam	antianxiety-benzodiazepine	Less than 1percent of patients who take benzodiazepines experience slurred speech and symptoms of dysarthria (slow, uncoordinated speech).
Xenical	orlistat	gastrointestinal lipase inhibitor	No effects on voice or speech mechanisms have been reported.
Xyzal	levocetirizine	antihistamine	Antihistamines have a drying effect on mucous membranes that may cause hoarseness, sore throat, voice changes, or laryngitis. In addition to irritation, dry vocal folds may be more prone to such injuries as nodules.
Zanaflex	tizanidine	antispasmotic	Dry mouth may occur. The use of sedatives may produce an uninhibited or diminished drive to speak. Symptoms of dysarthria (slow, slurred, and uncoordinated speech movements) may also be linked to sedative use.
Zantac	ranitidine	gastrointestinal-H2 blocker	Two effects exist: 1) The antihistamine component has a drying effect on mucous membranes that may cause hoarseness, sore throat, voice changes, or laryngitis. In addition to irritation, dry vocal folds may be more prone to such injuries as nodules. 2) However, this medication may benefit the voice if it is taken to reduce acidity of gastroesophageal reflux. Uncontrolled spillage of stomach acids into the larynx is harmful to delicate vocal fold tissues.
Zestoretic	lisinopril/HCTZ	cardiovascular-ACE inhibitor/diuretic	Two adverse reactions are possible: 1) Excessive coughing has been associated with the use of ACE inhibitors, which, in turn, may lead to hoarseness and possible vocal tissue damage. 2) The diuretic component may have a drying effect on mucous membranes, including those used to speak and sing. Hoarseness, sore throat, voice changes, and laryngitis are possible symptoms. In addition to irritation effects, dry vocal folds may be more prone to such injuries as nodules.
Zestril	lisinopril	cardiovascular-ACE inhibitor	Excessive coughing has been associated with the use of ACE inhibitors, which, in turn, may lead to hoarseness and possibly vocal tissue damage.
Zetia	ezetimibe	cardiovascular-lipid reduction	No effects on voice or speech mechanisms have been reported.

(*continued*)

Table AL.1. Medications and Their Effects on the Voice (*continued*)

Brand Name	Generic Name	Drug Class	Effects on Voice or Speech
Ziac	bisoprolol/HCTZ	cardiovascular-beta blocker/diuretic	Diuretics have a drying effect on mucous membranes, including those used to speak and sing. Hoarseness, sore throat, voice changes, or laryngitis are possible symptoms. In addition to irritation effects, dry vocal folds may be more prone to such injuries as nodules.
Zithromax	azithromycin	antibiotic-macrolide	In general, no effects on voice or speech mechanisms are associated with antibiotic use. It should be noted, however, that antibiotic abuse/misuse can lead to an overgrowth of Candida in the body, possibly leading to laryngeal thrush.
Zocor	simvastatin	cardiovascular-statin	No effects on voice or speech mechanisms have been reported.
Zoloft	sertraline	antidepressant-SSRI	Zoloft may have a drying effect on mucous membranes that can cause hoarseness, sore throat, voice changes, or laryngitis. In addition to irritation, dry vocal folds may be more prone to such injuries as nodules.
Zovirax	acyclovir	antiviral	No effects on voice or speech mechanisms have been reported.
Zyban	buproprion	antidepressant-aminoketone	No effects on voice or speech mechanisms have been reported.
Zyloprim	allopurinol	antigout	No effects on voice or speech mechanisms have been reported.
Zyprexa	olanzepine	atypical antipsychotic	Infrequent effects may include coughing, pharyngitis (sore throat), or (nondefined) voice alterations.
Zyrtec	cetirizine	antihistamine	Antihistamines have a drying effect on mucous membranes that may cause hoarseness, sore throat, voice changes, or laryngitis. In addition to irritation, dry vocal folds may be more prone to such injuries as nodules.