



The Art of Caring for the Professional Singer


Perspectives from a Multidisciplinary Voice Team

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Effects of Voice Disorders



- ▶ Emotional
- ▶ Physical
- ▶ Social
- ▶ Economic



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Goals

- ▶ Understand the basics of voice production
- ▶ Understand how to appropriately evaluate the voice
- ▶ Understand different genres of singing, voice classification, and general singing vocabulary
- ▶ Understand special concerns and considerations for the performer
- ▶ Understand treatment options
- ▶ Discuss prevention of vocal injury

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Understand the Performer Demands

- ▶ 8 shows a week
- ▶ Waiting in long line early morning to get opportunity to audition
- ▶ Having to be ready at a moments notice for an audition call
- ▶ Stress of having a paycheck
- ▶ Lack of recovery time
- ▶ Pressures to celebrate after shows
- ▶ Meet and greets
- ▶ Having to maintain healthy voice despite day job
 - ▶ Waiting tables



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The Team, The Team, The Team



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Goals

- ▶ Protect
 - ▶ Educate
- ▶ Treat

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VOCAL, THROAT, LARYNX, PC

Secrets for a Long Performance Career

- ▶ Prevention of vocal injury
- ▶ Recognition and timely evaluation of vocal injury
- ▶ Early and appropriate treatment of vocal injury

Hoarseness ≠ "Laryngitis"

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Voice Anatomy and Physiology

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Most Sounds

Voice and speech

▶ Power source

▶ Oscillator

▶ Resonator

▶ Transmitter & receiver

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Muscles of the Larynx

Lateral Cricothyroid

Posterior Cricothyroid

Interarytenoid

Cricothyroid

Thyroarytenoid

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Layers

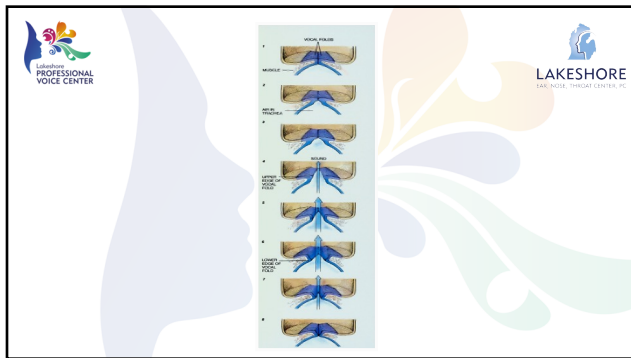
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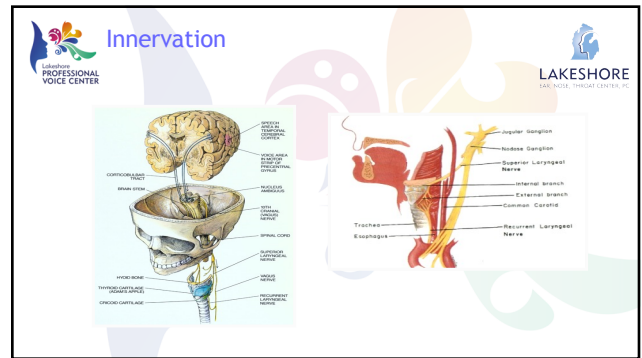
Muscle

Vocal ligament

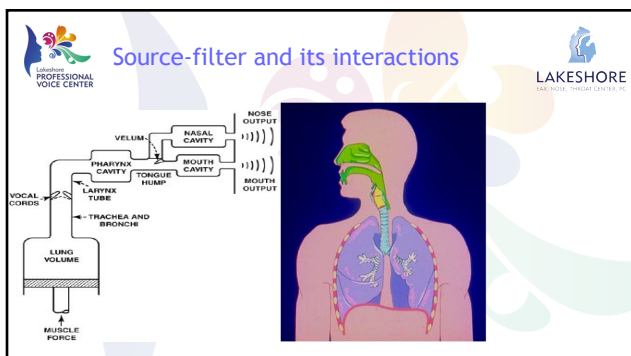
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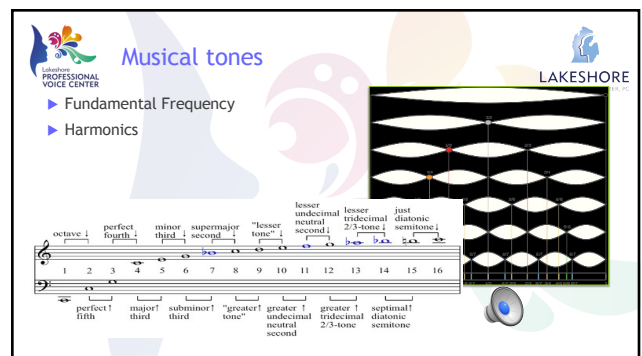
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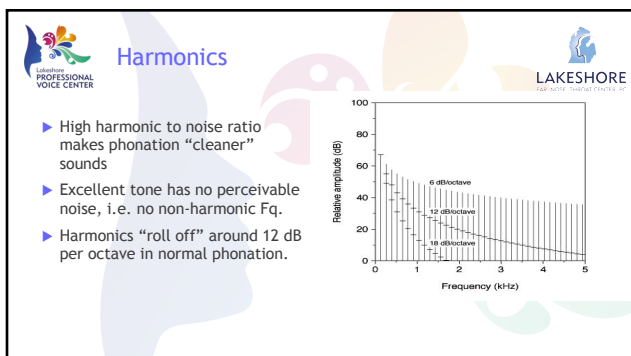
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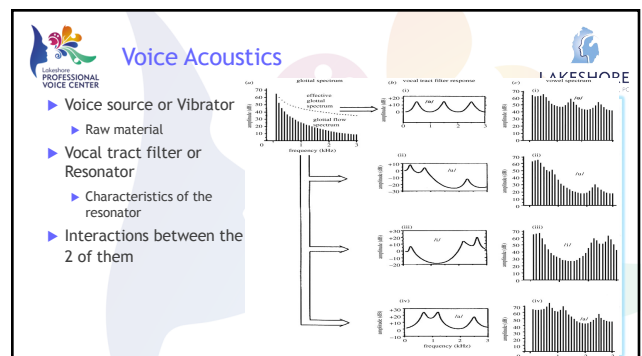
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Voice Source Harmonics

- ▶ Non-noisy styles of singing require voice source sounds approximately harmonic Fq. produced by the vibrator (composer)
- ▶ These Fq oscillate regularly above and below the target Fq at a rate of 6 times per second, that is Vibrato

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Formants

- ▶ These frequency ranges that are emphasized in the vocal tract are called formants,
- ▶ Vocal tract is a shapeable, non-uniform tube.
- ▶ Natural resonance frequencies are tunable
- ▶ First two (F1, F2) are the most responsive to changes in vocal tract shape

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Formants

- ▶ Narrowing near the front, lowers F1 and raises F2
- ▶ Lip rounding lowers both especially F1.
- ▶ Lip spreading raises both

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Intensity and Frequency

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Secret to Healthy Voice Production

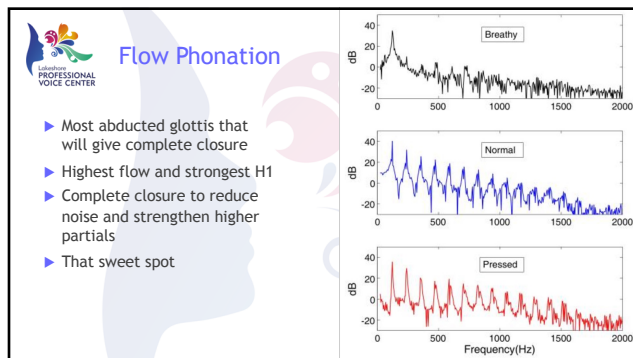
- ▶ Maximize use of power source and resonators to reduce work of the oscillator while producing the best sound possible

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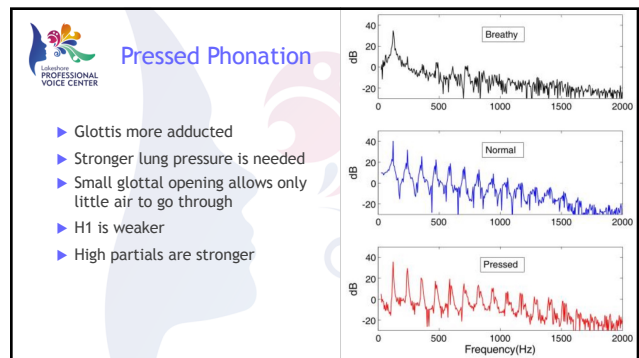
Breathy Phonation

- ▶ Never complete closure
- ▶ High airflow so strong H1
- ▶ But the noise component is seen instead of higher harmonics

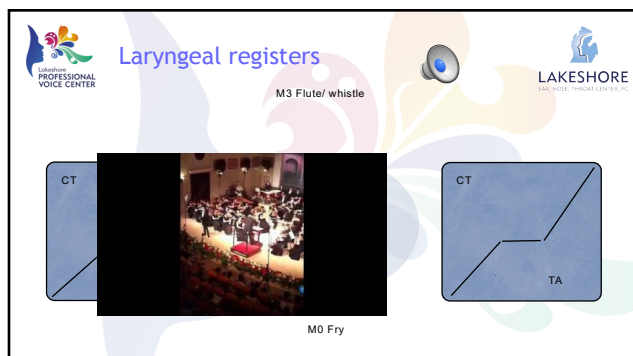
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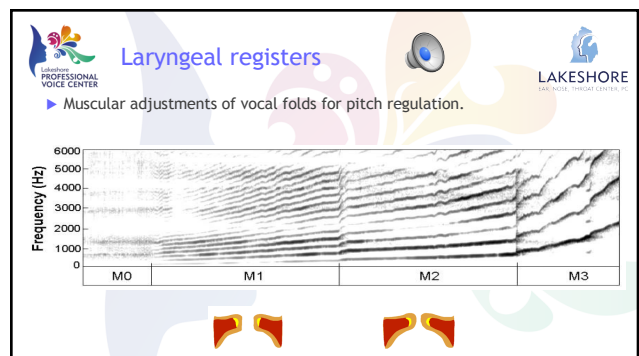
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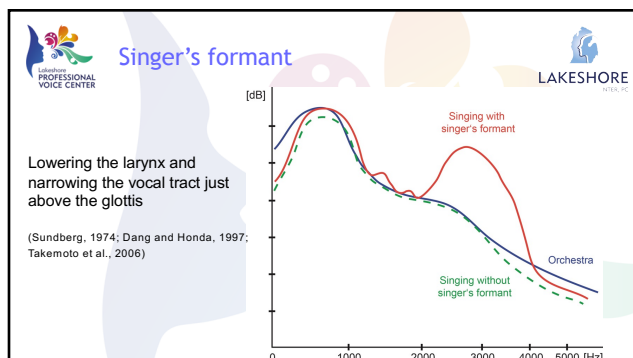
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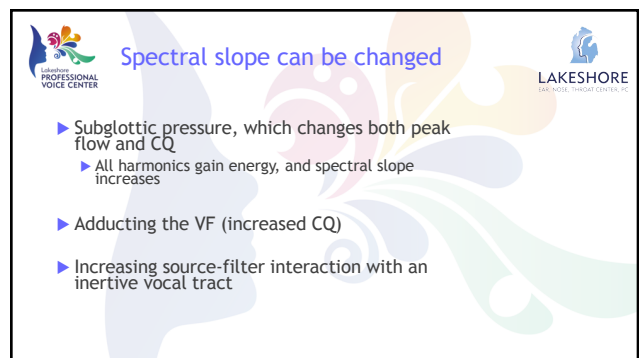
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Singing styles

Classical styles

- laryngeal tilt
- elongated VT:
 - raised soft palate
 - inverted megaphone
- low/mid larynx
- no amplification
 - singing formant
 - loudness >90dB
- formant tuning
- smooth passaggio
- detriment of the lyrics
- years of training
- no transposing

Vocal hygiene:

- hydration
- GERD/LPR
- vocal budgeting
- speaking voice
- Respiratory / phonatory coordination
- warm-ups & cool downs
- vocal training

Popular styles

- mid/high larynx
- mixed voice
- neutral or relaxed soft palate
- horizontal VT
 - spread lips
- lyrics are not distorted
- different stylistic choices that allow for noise
- amplification
 - no singing formant
- smooth (or not) passaggio
- A-P compression
- transposing
- choreography /instrument

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Vocabulary

- Voice types
 - Soprano
 - Mezzo-soprano
 - Alto
 - Counter-tenor
 - Tenor
 - Baritone
 - Bass
- Tessitura
- Register
 - Fry, Modal, Head, Whistle
- Dynamics
 - fff, ff, f, mf, mp, p, pp, ppp*

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Voice sub-classification

- Sopranos
 - Soubrette
 - Lyric coloratura
 - Lyric
 - Dramatic coloratura
 - Spinto
 - Dramatic
- Mezzos
 - Lyric
 - Coloratura
 - Dramatic
- Altos

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Voice sub-classification

- Tenor
 - Character tenor
 - Leggero
 - Lyric
 - Italianischer
 - Spinto
 - Dramatic
- Baritone & Bass
 - Lyric Baritone
 - Verdi Baritone
 - Dramatic baritone
 - Dramatic Bass-baritone
 - (Basso) Buffo
 - (Basso) Profundo

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Evaluation

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Evaluation

- Stop
- Listen
- Look

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Hoarseness




- ▶ Hoarseness = "Laryngitis"
- ▶ Laryngitis signifies inflammation of the vocal folds
- ▶ Hoarseness is a **change in vocal quality** that can occur with ANY alteration of vocal physiology
- ▶ Do NOT assume hoarseness is from reflux or allergies.

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History: Vocabulary




- ▶ *Passagio*
- ▶ *Tessitura*
- ▶ Range
- ▶ Register
 - ▶ Fry
 - ▶ Modal
 - ▶ Head
 - ▶ Whistle
- ▶ Dynamics
 - ▶ *fff, ff, f, mf, mp, p, pp, ppp*
- ▶ Voice types/Classification
 - ▶ Soprano
 - ▶ Mezzo-soprano
 - ▶ Alto
 - ▶ Counter-tenor
 - ▶ Tenor
 - ▶ Baritone
 - ▶ Bass
- ▶ Voice styles

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History



- ▶ Voice
- ▶ Nature of the performance
 - ▶ Repertoire
 - ▶ Rehearsals
 - ▶ Environment
- ▶ Training
- ▶ Economic factors
- ▶ Psyche
- ▶ General health

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History: Nature of the Voice Complaint




- ▶ Roughness
- ▶ Breathiness
- ▶ Vocal Fatigue
- ▶ Reduced range
- ▶ Lowering/raising of pitch
- ▶ Air hunger
- ▶ Diplophonia
- ▶ Pain
 - ▶ Strain/struggle
 - ▶ Instability, pitch breaks
 - ▶ Volume disturbance
 - ▶ Day-to-day variability
 - ▶ Time of day variability
 - ▶ Prolonged warm up time

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History: Voice Complaint




- ▶ Acute vs. chronic
- ▶ Sudden vs. gradual
- ▶ Progressive vs. intermittent
- ▶ **Does voice return to NORMAL**
- ▶ Precipitating event (vocal abuse, overuse, URI, menses, medication)
- ▶ Ability to meet vocal demands
- ▶ Vocal hygiene and habits
- ▶ Patient concerns

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History of Singer




- ▶ Genre of music
- ▶ Voice classification/subclassification
- ▶ Style of singing
- ▶ What is your voice doing that it should not do?
- ▶ What is your voice not doing that it should do?
- ▶ What part of range affected?
 - ▶ Ask about ability to sing soft in upper range?
 - ▶ *Passagio*?
- ▶ Increased vocal effort?

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Voice and Repertoire




- ▶ Nature of current performance
 - ▶ Genre, style, and medium
 - ▶ Repertoire
 - ▶ Does the music sit well in the *tessitura*
 - ▶ Is there a lot of speaking
 - ▶ Emotional dynamics
 - ▶ Being in the moment while remembering technique
 - ▶ Character voices

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Costumes and Props




- ▶ Heavy costumes restricting motion or breath
- ▶ Beards, mustaches that affect articulation
- ▶ Heavy wigs
- ▶ Hairspray that can irritate

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Posture




- ▶ Playing an instrument
- ▶ Character stature
- ▶ Inclines/declines to stage
- ▶ Dancing while singing
- ▶ Uncomfortable staging

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Performance Environment




- ▶ Acoustics
- ▶ Monitors/amplification
- ▶ Competing sounds
- ▶ Air quality
- ▶ Smoke machines
- ▶ Minimize irritants
- ▶ Maximize acoustics

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Rehearsals




- ▶ Too many
- ▶ Too long
- ▶ Lack of permission to “mark”
- ▶ Poor marking technique
- ▶ Asked or feeling compelled to rehearse at performance level
 - ▶ No need to show everyone how awesome you are
- ▶ Rehearsal space different from performance space

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After the show....




- ▶ Meet and greets
- ▶ Socializing at the bar
- ▶ Going out to eat
- ▶ Talking in loud environments
- ▶ NEED RECOVERY!!

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Amount and Nature of Voice Training




- ▶ How many years of singing?
- ▶ How many years of training?
- ▶ Continuous or interrupted?
- ▶ How many teachers?
- ▶ How long with current teacher?
- ▶ Any training for speaking voice?

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Psyche




- ▶ Stage fright
- ▶ Stress
- ▶ Insecurities/anxiety
- ▶ Hypochondriasis

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General Health




- ▶ Reflux
- ▶ Allergies
- ▶ Pulmonary
- ▶ Neurologic disease
- ▶ Previous intubations and surgeries
- ▶ Hypothyroidism
- ▶ Previous psych history
- ▶ Menstrual cycle
- ▶ Medications that dry or irritate
- ▶ Exhaustion/sleep deprivation

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Medications and Voice




- ▶ Antihistamines: Dry you out
- ▶ Antidepressants/psychotropic meds: Dry you out
- ▶ Ace inhibitors: Cause cough
- ▶ Motrin/aspirin/Coumadin/Plavix: increase susceptibility to vocal fold hemorrhage
- ▶ Calcium channel blockers: Can increase reflux
- ▶ Hormones: Can alter pitch and quality. Androgens can permanently lower the pitch of the female voice
- ▶ Steroid inhalers: can cause irritation and yeast to the vocal folds
- ▶ Homeopathic medications

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Associated symptoms




- ▶ Frequent throat clearing
- ▶ Cough
- ▶ Allergies
- ▶ Globus sensation
- ▶ Pain
- ▶ Neurologic symptoms
- ▶ Laryngospasm
- ▶ Dyspnea, air hunger
- ▶ Dysphagia
- ▶ Otalgia
- ▶ Hemoptysis
- ▶ Weight loss

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Bad Habits




- ▶ Coughing
- ▶ Throat clearing
- ▶ Smoking
- ▶ Screaming
- ▶ Speaking over background noise
- ▶ Poor physical conditioning
- ▶ Poor sleep
- ▶ Talking to groupies
- ▶ Eating late night
- ▶ Going out after show
- ▶ Poor technique
- ▶ Hard glottal attack
- ▶ Glottal fry
- ▶ Poor hydration
- ▶ Voice-inappropriate repertoire

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Economic Factors




- ▶ Professional status
- ▶ Short and long-term goals
- ▶ Vocally demanding day-job
- ▶ Needing to perform compromised
- ▶ Needing to book more obligations than voice can withstand

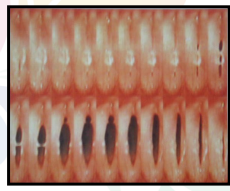
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Examination




- ▶ Listening
- ▶ Head and Neck Examination
- ▶ Looking
 - ▶ Laryngeal visualization
 - ▶ Flexible laryngoscopy
 - ▶ Rigid telescope
 - ▶ Videostroboscopy



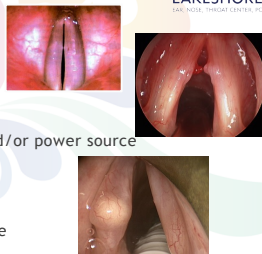
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Examination




- ▶ Listen
 - ▶ Roughness - vibratory impairment
 - ▶ Lesion
 - ▶ Scar
 - ▶ Inflammation
 - ▶ Breathy - impairment of closure and/or power source
 - ▶ Paresis
 - ▶ Paralysis
 - ▶ Aging, Parkinson
 - ▶ Resonance change - vocal tract issue

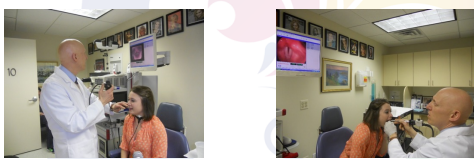


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Laryngeal Imaging






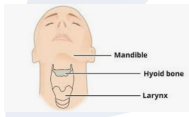
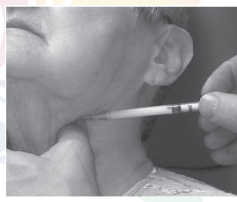
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Pain Involved?




- ▶ Palpate for thyrohyoid pain syndromes
 - ▶ Hyoid bone syndrome
 - ▶ Superior laryngeal nerve neuralgia

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Introduction



- ▶ Hyoid bone syndrome (HBS)
 - ▶ Stern N, Jackson-Menaldi C, Rubin AD. Hyoid Bone Syndrome: A Retrospective Review of 84 Patients Treated with Triamcinolone Acetonide Injections. *Ann Otol Rhinol Laryngol* 2013; 122: 159-62.
 - ▶ 51% of the subjects had dysphonia in addition to HBS
 - ▶ 89% of them had normal appearing vocal folds.
 - ▶ Patients who experienced pain relief with steroid injection also reported improvement in voice quality.

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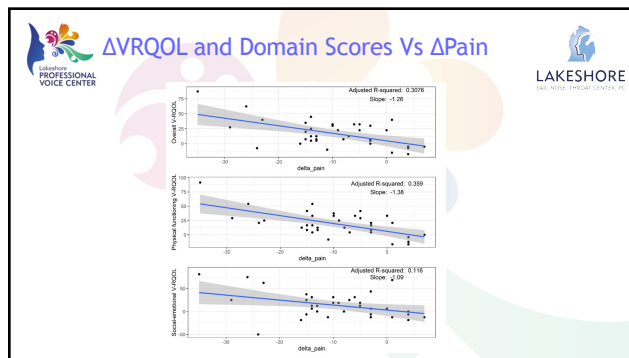
Pain and Voice

Ricola

EVERYDAY CARE
BECAUSE YOU NEED YOUR VOICE DAILY

Vocalzone
Throat Pastilles
Benzoin, Peppermint Oil
& Myrrh Tincture
24 Throat Pastilles
Helps keep a clear voice

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Conclusion

- ▶ Effective treatment of pain related to HBS led to improvement in patients' voice complaints.
- ▶ Throat pain may have a direct effect on self-perception of voice.
- ▶ May be related to compensatory perilaryngeal adjustments patients make when speaking with a "guarding" effect when they have throat pain.

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Objective and Perceptual Voice Measures

- ▶ HPI (medical, voice use and vocal health, psychosocial)
- ▶ Self-assessment
- ▶ Perceptual
- ▶ Acoustical : Computerized voice analysis (F0, VRP, SPL, Perturbation, Spectrogram, Spectral)
- ▶ Aerodynamic
- ▶ EGG

The Voice Profile (center) called the Phonetogram


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Treatment


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Treatment




- ▶ Acute dysphonia
- ▶ Chronic dysphonia

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Acute Dysphonia/Vocal Emergencies




- ▶ Determine if safe to use the voice
 - ▶ RISK OF MORE SERIOUS/CAREER-THREATENING INJURY (SCAR)
- ▶ Help to return to voice use

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Acute Dysphonia




- ▶ Hemorrhage - needs absolute voice rest
- ▶ Tear - needs absolute voice rest
- ▶ Laryngitis: viral, phonotraumatic
- ▶ Other: URI, allergies, LPR
- ▶ Treatment is usually medical
- ▶ If the performer has never seen his/her vocal folds at his/her best, it may be difficult to determine what is chronic and what is new.

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When to Pull the Performer




- ▶ Larynx
- ▶ Reputation
- ▶ Economics
- ▶ Outside pressures
- ▶ Primary responsibility is to patient, but must consider ramifications of recommendations

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When to Pull Performer: Larynx




- ▶ Can they perform safely
 - ▶ What is risk of long-term sequelae
 - ▶ Risk of developing mass or scar
 - ▶ Tear: voice rest for 3 days
 - ▶ Hemorrhage: voice rest for 1 week, followed by limited voice use
- ▶ Other inflammation - ???
 - ▶ Viral URI
 - ▶ Phonotraumatic

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When to Pull Performer: Reputation




- ▶ Risk of performing badly vs developing reputation of being unreliable
- ▶ Can they perform the role adequately?
- ▶ Can they perform well?
 - ▶ Type of music?
 - ▶ Lead or 5 minute cameo?
 - ▶ Can we help them stay on stage?

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When to Pull Performer: Economics




- ▶ What happens if they do not perform?
 - ▶ Will they lose the gig?
 - ▶ Understudy?
 - ▶ Cancel show?
 - ▶ Will they be able to pay their rent?
- ▶ Professional goals
 - ▶ Short-term vs long-term
 - ▶ Risk-reward-consequence

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How to Keep the Performer on Stage




- ▶ Performance Modification
- ▶ Medications
- ▶ Voice therapy
- ▶ Voice preservation
 - ▶ Only use it when getting paid (or for a grade if you are a student)
 - ▶ "Mark" rehearsals
 - ▶ Maximize vocal hygiene

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Performance Modification



- ▶ Change melodies/interpretation
- ▶ Reconsider repertoire
- ▶ Mark rehearsals
- ▶ Amplification
- ▶ Resist giving 200%
- ▶ Save on group numbers/backup
- ▶ Let others sing some of the tunes

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Medication to Treat




- ▶ PPIs
- ▶ Mucolytics/cough suppressants
- ▶ Topical decongestants
- ▶ Steroids
- ▶ Steam
- ▶ Glycerin throat lozenges

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Risks of Steroids




- ▶ Mood changes
- ▶ Insomnia
- ▶ Avascular necrosis of the hip
- ▶ Blood Sugar elevation
- ▶ Ulcers
- ▶ Osteopenia
- ▶ Weight gain

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No-no's




- ▶ Caution with antihistamines and systemic decongestants
- ▶ Topical analgesics
- ▶ Aspirin
- ▶ Non-steroidal medications
- ▶ Home remedies...maybe

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Gould's Gargle




- ▶ ½ teaspoon kosher salt
- ▶ ½ teaspoon baking soda
- ▶ ½ teaspoon corn syrup or honey
- ▶ 8 oz warm water

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Treating a Cold




- ▶ Sleep
- ▶ Voice preservation
- ▶ Cough suppression
- ▶ Hydration
- ▶ Cool mist humidification
- ▶ Treat the nose
- ▶ Glycerin lozenges
- ▶ SOVTS
- ▶ Recognize limitations
- ▶ Performance modification
- ▶ Evaluate hemorrhage/tear
- ▶ Steroids

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Chronic Dysphonia




- ▶ Identify all contributing factors
- ▶ Treat underlying medical issues
- ▶ Voice therapy
- ▶ Surgery may be warranted
 - ▶ Removal of masses
 - ▶ Steroid injection
 - ▶ Improve vocal fold closure


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Vocal Fold Masses in Performer




- ▶ Many successful performers have vocal fold masses
- ▶ Mass may provide character of voice
- ▶ Must make sure mass is the problem before excising it



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Surgical Intervention for Vocal Fold Lesions



- ▶ Everyone is terrified of the Julie Andrews story
- ▶ "My teacher told me I should avoid surgery at all costs!"
- ▶ There is risk to doing surgery, but there is also risk to not doing surgery
- ▶ When done appropriately, the risk of worsening of the voice is very low.
- ▶ When medical management fails, surgery may be warranted
- ▶ Sometimes obvious that voice therapy will not resolve the problem

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Requirements for Good Surgical Outcome

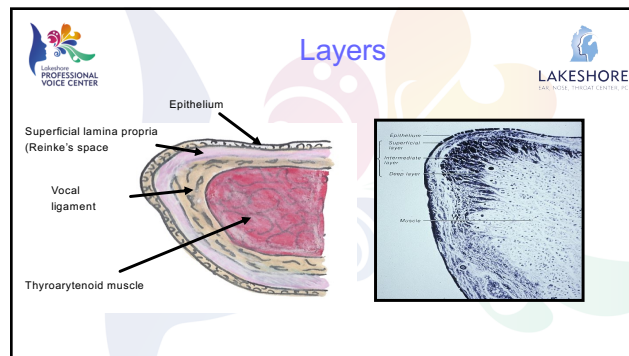


- ▶ Good microlaryngeal surgeon
- ▶ Invested patient - this is a team effort
- ▶ Good preoperative care
 - ▶ Vocal therapy
 - ▶ Vocal hygiene
 - ▶ Patient's job - not to make the voice worse
- ▶ Good postoperative care
 - ▶ Voice therapy

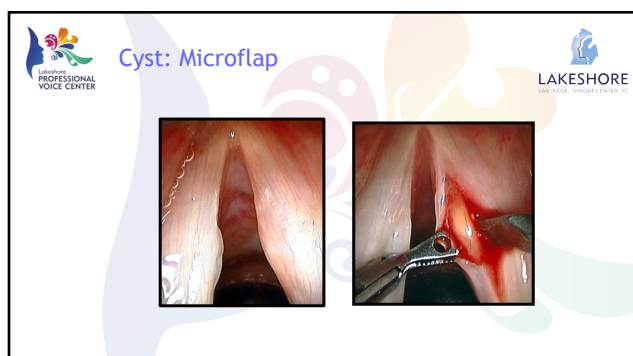
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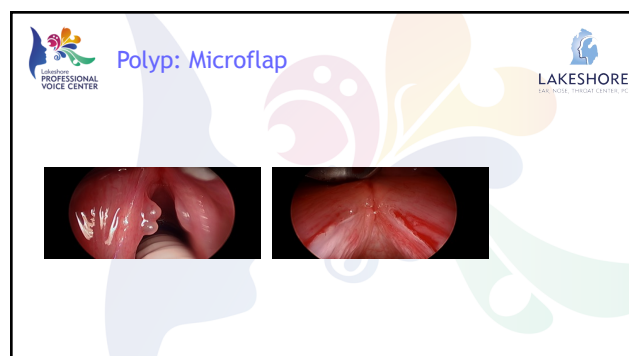
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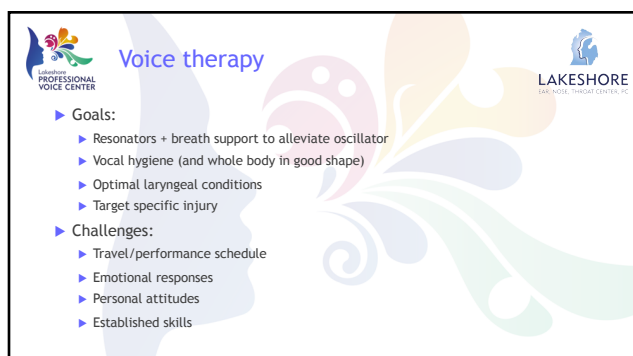
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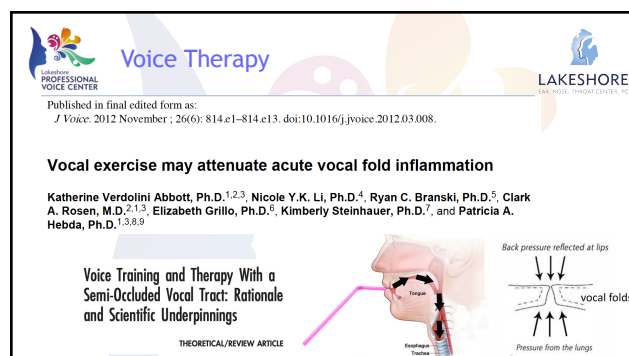
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Voice Therapy



- ▶ Warm ups/Cool downs
- ▶ Budgeting
- ▶ SOVTS/RV
- ▶ Speaking voice
- ▶ Transfer to singing voice
- ▶ Collaborate with team

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▶ *Whether it is within the scope of the voice-oriented speech pathologist to also treat the artistry is arguable as it is a fine line between treating and teaching voice. We strongly recommend recognition of our professional competencies and limitations in this space and of the specialised skills and experience of our singing teacher colleagues*

-Debbie Phyland


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Prevention of Injury

Vocal Hygiene

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Secrets to Good Voice Production




- ▶ Optimizing use of resonators and breath support to minimize strain on the vocal folds.
 - ▶ GOOD TRAINING©
- ▶ Also have to keep the vocal folds and the rest of the body in good shape.

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Prevention




- ▶ Avoid phonotrauma/excessively forceful closure of the vocal folds
- ▶ Create a healthy environment within your vocal instrument
 - ▶ Healthy vocal folds
 - ▶ Healthy respiratory tract
 - ▶ Healthy body
- ▶ Keep the nerves working

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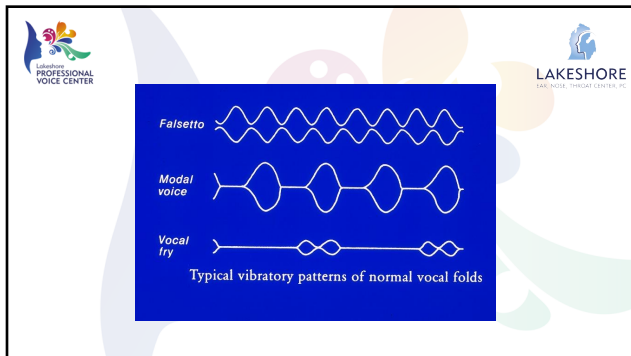


Voice Related Phonotrauma



- ▶ Hard glottal attack/pressed phonation
- ▶ Overuse
- ▶ Talking in loud environment
- ▶ Screaming
- ▶ Straining
- ▶ Speaking in inappropriate range
 - ▶ Glottal fry
- ▶ Talking after a performance
 - ▶ GO HOME!!!!
- ▶ **Singing age or range inappropriate music**
- ▶ Character voices

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Environment

- ▶ Wear 1 ear plug if loud background noise
- ▶ Monitors/amplification
- ▶ Smoke-free

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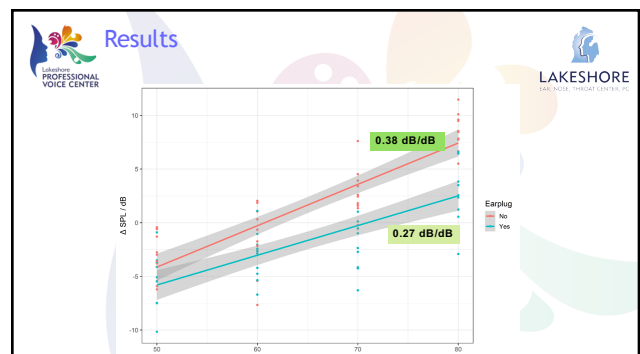
Wear an Ear Plug!

- ▶ Wearing one ear plug decreases Lombard effect
- ▶ Might prevent vocal hangover
- ▶ We could only deliver noise up to 80 dB to not put subjects at risk, but many real-life environments are greater than that

The Effect of Unilateral Hearing Protection on Vocal Intensity With Varying Degrees of Background Noise

*Adam D. Rubin, *Juliana Codino, *Anyia Costelloe, *Michael M. Johns, *Austin Collum, and *Pasquale Bottalico, *St. Clair Shores, and †Warren, Michigan; †Los Angeles, CA, and †Champaign, Illinois

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Hydration: WHY WATER?

- ▶ Well-hydrated vocal folds require less subglottic pressure.
- ▶ Less susceptible to injury from voice use
- ▶ May recover more quickly from existing injury

Titze, 1988, Verdolini et al 1990, 2002

Titze 1991, Verdolini et al, 1994

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What can dry you out?

- ▶ Sweating
- ▶ Mouth breathing
- ▶ Medications
- ▶ Smoking
- ▶ Alcohol
- ▶ Caffeine Soda (pop), Coffee, acidic juices - bad
- ▶ Dry air
- ▶ Failure to replace fluids lost with daily activities (including sleep)

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Hydration



- ▶ 64oz per day.
- ▶ Drink in am as you lose water during sleep.
- ▶ Keep indoor humidity 30-50%
- ▶ Keep the nose moist (saline sprays, sinus rinse)
- ▶ Try to pee pale
- ▶ Rarely bad
 - ▶ Cardiac /renal issues





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Treatment: Reflux



- ▶ Dietary and behavioral modifications
- ▶ Medications
 - ▶ Proton pump inhibitors (Omeprazole, pantoprazole, lansoprazole)
 - ▶ H2 blocker (zantac, pepcid)
 - ▶ Carafate
 - ▶ Alginates
 - ▶ Baclofen
- ▶ Surgery
 - ▶ Nissen fundoplication

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Treatment: Allergy




- ▶ Nasal hydration and irrigation
 - ▶ Salt water sprays
 - ▶ Sinus rinse
 - ▶ Neti-pot
- ▶ Nasal steroids
- ▶ Nasal antihistamines
- ▶ Immunotherapy (allergy shots)
- ▶ Systemic antihistamines - caution

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Smoking




- ▶ Won't
 - ▶ Make you have the careers of Janice Joplin or Joe Cocker
- ▶ Will
 - ▶ Cause severe inflammation of the vocal folds
 - ▶ Potentially cause precancerous and cancerous lesions of the vocal folds
 - ▶ Likely shorten your career significantly (and possibly your life)
 - ▶ Destroy your lungs...not so good for breath support
 - ▶ Make you cough a lot

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Cannabis




- ▶ Not putting anything in writing....

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Bearing Down




- ▶ Valsalva is produced by slamming the vocal folds together
 - ▶ Weight lifting
 - ▶ Giving birth
 - ▶ Vigorous sex
 - ▶ Breath holding

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Cough and Throat Clearing




- ▶ Cough: Acute vs chronic
 - ▶ Identify cause
- ▶ 99% of people who think they have post-nasal drainage do not.
- ▶ Nerves are irritated
- ▶ “Phantom mucus”
- ▶ Throat clearing irritates more
- ▶ Respiratory retraining

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External Trauma




- ▶ Careful in contact sports
- ▶ Think twice about the martial arts sparring
- ▶ Wear your seatbelt shoulder strap.

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Surgeries and Intubations




- ▶ Beware of the risks of surgeries on the neck
 - ▶ Thyroid
 - ▶ Cervical spine
- ▶ Anesthesiologists should know the importance of a singer's voice to their livelihood.
 - ▶ Small tubes (6.0 or smaller)
 - ▶ No student intubations

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Secrets for a Long Performance Career




- ▶ Prevention of vocal injury
- ▶ Recognition and timely evaluation of vocal injury
- ▶ Early and appropriate treatment of vocal injury

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Career-Prolonging Considerations




- ▶ Prioritize obligations
- ▶ Recognize limitations
- ▶ Control environmental factors (Background noise, irritants, monitors)
- ▶ Hydration, diet and exercise (but, avoiding valsalva)
- ▶ Neck surgeries/intubations (small tubes)
- ▶ Not smoking (...anything)
- ▶ Cough / throat clearing
- ▶ Avoid external trauma
- ▶ Review medications
- ▶ Get vaccinated!
- ▶ TAKE GOOD CARE OF YOUR INSTRUMENT

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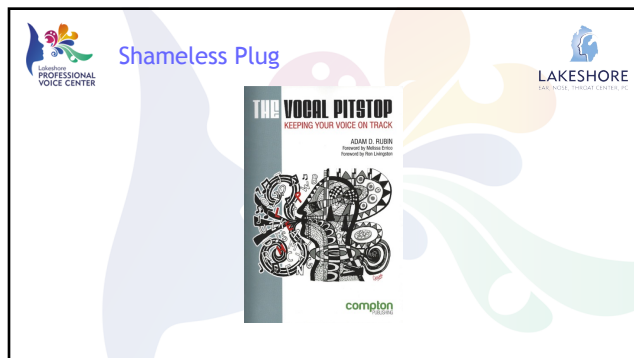
The Art of Caring for the Professional Singer



Adam D. Rubin, MD^{h.v.c.*}, Juliana Codino, MS, CCC-SLP^{h.v.d}

- ▶ Otolaryngol Clin North Am. 2019 Aug;52(4):769-778.

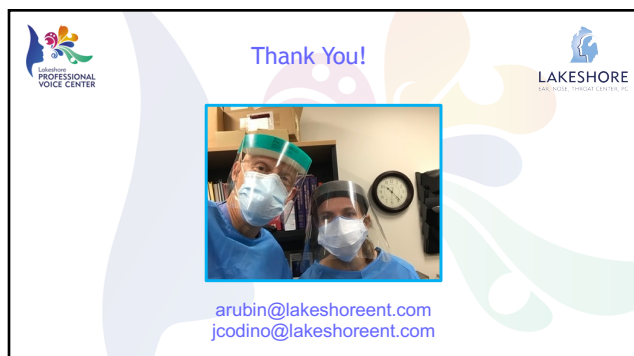
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