Always remember....

Common A profiles

- Lesions: 1st or 2nd?
- Stiff/scarred vocal folds / sulcus
- Dysarthrias: flaccid vocal fold paralysis
  - Spastic dysarthria
  - Hypokinetic (PD)
  - Hyperkinetic (EVT, SD)
- Transgender dysphoria
- Geriatric considerations

Voice Therapy in Individuals with Anatomically-Based Voice Dysfunction

Therapy as 10th Rx Modality:

1. to reduce causative factors & improve voice function: eg, bilateral vocal fold nodules
2. to minimize effects of lesions or diseases & optimize voice function: eg, sulcus vocalis; vocal cord scarring; vocal paresis; dysarthrias
“Vocal Nodules” ie. Laryngeal Isometric

- Postural misuse is general: Rx general to specific
- Use a comprehensive approach
- Use the CVO/lowered lung volume
- Don’t use higher lung volumes, sighing, or “breathing training”
- Optimal resonance feedback is correlated with reduced glottal gap
- Jaw, tongue tension contribute to laryngeal isometric
- Curb motor mouth behaviour

Therapy Adjuvant to Phonosurgery

- **Pre-Operative:**
  - instruct on post-operative voice use
  - post-op voice rest/conservation
  - eliminate vocal abuses & misuses
  - model optimal post-op techniques
  - council on reflux management

- **Post-operative:**
  - facilitate adaptation to structural change
  - minimize scarring
  - maintain vocal hygiene
  - optimize post-surgical voice

Stiff / Scarred Vocal Folds

- Vocal hygiene may be important
- **Massage** and **Stretching** are primary physical therapy strategies to minimize scarring
- Glottal Fry, Loud voice use have been recommended in literature
- Vocal Function Exercises may accomplish massage & stretch: lip bubble + glissando
Sulcus Vocalis

- 1st complaints: high pitch, weak voice, harsh-breathy quality
- 1st signs: vocal cord closure (bowed); stiffness, mucosal wave
- Long-standing negative compensatory muscle misuse?
- If not, symptomatic therapy can focus on optimizing closure
- Similar strategies to v. fold scarring

Flaccid Dysarthria: Vocal Fold Paralysis

- Forced adduction exercises have been advocated: don’t use during spontaneous recovery, or if other augmentation procedures planned
- Best closure is at lower pitch
- Best closure/quality is at “quiet”
- Posture changes may facilitate closure
- Vocal amplification may be required

Hypokinetic Dysarthria: Parkinson’s

- LSVT™ (“get loud”) for increasing loudness and vocal dynamics. May include forced adduction
- Or:
  - Coordinated voice onset/sigh onset to reduce rigidity. CVO may improve vocal fold closure. Sigh may improve flow.
  - Other/combined vocalization approaches: Group Singing (Tanner, Ramage & Liu, submitted)

Hyperkinetic Dysarthria- Add. SD

- Usually best with comprehensive Rx
- CVO: lowered lung volume reduces hyper-adducting responses
- Resonance practice changes feedback. Passive jaw and tongue movements reduce pull on larynx
- Inhalation therapy (?) difficult to transfer
- Pitch/Register therapy or singing/chanting mode may increase fluency.
- Increase pitch to minimize tremor: vocal SIREN
- Commit to a long-term relationship!
Hyperkinetic Dysarthria - EVT

- increase pitch: 50 Hz (Dworkin and Meleca, 1999)
- decrease intensity / laryngeal effort
- chanting and stabilizing the larynx manually or with an elastic neckband (Dworkin and Meleca, 1999)
- combined therapy program (Barkmeier-Kraemer et al., 2011):
  - training in relaxation/breathing;
  - increase speaking rate to reduce voiced segment durations
  - increase f0 and upward phrase-end inflections
  - use breathiness to reduce vocal intensity and v. fold adduction
  - anterior facial resonance with 'open' throat.

Transgender Voice Therapy (m→f)

- f0 above 160 Hz: target 180Hz and 200 Hz
- formant frequencies (elevate lx, retract lips)
- alter intonation patterns
- reduce speaking intensity
- ↑ breathiness
- adopt feminine syntax, vocabulary, articulation, gestures. (Gelfer, 1999; Mayer and Gelfer, 2008; Soderpalm et al, 2004)
- time voice therapy to optimize phonosurgery results, psycho-social adjustments

Geriatric considerations

- counsel re expected aging changes
- consider hearing, other communication challenges
- optimize communication strategies
- remember hydration!
- extinguish mal-adaptive muscle misuses that reflect attempts to maintain previous f0
- optimize vocal fold adduction: semi-occluded vocal tract tactics; resonance enhancement; LSVT LOUD™
- time Tx to optimize medical/surgical techniques (eg. vocal fold augmentation)

ALERT: Psychogenic Voice Dysfunction

- When to initiate therapy?
- What client education is required?
- How to address emotional factors?
- Role of feedback during therapy?
- How to recognize inappropriate R's?
- When to refer to mental health professional?
**Conversion Aphonia/Dysphonia**

- Evaluate psychological gain factors
- Education: demonstrate potential for normal function
- Reassure: no CA; voice will return
- Review facilitation techniques that helped: cough; humming; "um hm"; fry; inhalation; pushing; sighing; pitch Δ; CVO; jaw; tongue; posture Δ
- Choose, extend, persevere!
- Put the patient in charge. Reassure!

**Psychological Interference**

- reduced motivation
- inappropriate response to a demonstrated voice improvement
- recurrence of dysphonia following normal voice recovery
- persistent signs of anxiety, depression, or psychological conflict
- request by client for a mental health referral

(Rammage et al, 2001)

**Irritable Larynx Syndrome**
(Morrison, Rammage, Emami, 1999)

hyperkinetic laryngeal dysfunction
(laryngospasm-PVFM, cough, dysphonia/globus)

*due to*

CNS over-reaction to normal sensory stimuli

*in response to a*

definitive triggering stimulus

**Central Sensitization**

- A defined input, or sensory stimulus, produces a sensory experience greater in amplitude and duration than would be expected
- The sensitivity of the pain system is shifted such that normally innocuous inputs can activate it & perceptual responses to noxious inputs are exaggerated, prolonged & widely spread

- This could represent a central amplification due to increased excitation or reduced inhibition
Amygdala: both enhances & inhibits pain processing


3-Level treatment for ILS as CSS

Minimize Triggering Stimuli External & Internal

ID Triggers
Maximize Reflux Management!
Maximize Compliance

Re-Program the Laryngeal Motor Responses
Desensitize
Motor Re-learning

Re-Program the Central System
Centrally Active Medications

Minimize Triggering Stimuli External & Internal

Explain the Reflux Reflex

- Irritability induced by gastroesophageal reflux may be due to:
  - Direct esophago-laryngeal reflex pathway
  - or
  - Laryngeal exposure to refluxate.
- Asthma-like reactions in parasympathetic laryngeal muscle system comparable to bronchial responses in "true" asthma.
- Many pharyngeal/laryngeal symptoms result

Gill & Morrison, J Otol, 1998

Maximize Compliance

- ID sensory triggers in (external and internal) environment
- May need to modify environment and/or behaviours initially to minimize exposure to triggers
- Use multi-modalities to maximize reflux Rx compliance (eg. "But Doctor…" www.pvcrp.com)
3-Level treatment for ILS as CSS

**Minimize Triggering Stimuli External & Internal**
- ID Triggers
- Maximize Reflux Management!
- Maximize Compliance

**Re-Program the Laryngeal Motor Responses**
- Desensitize
- Motor Re-learning

**Re-Program the Central System**
- Centrally Active Medications

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**Tone-down para-laryngeal tension**

- Suprahyoids
- Thyrohyoids
- Pharyngeals

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**Specific Techniques - PVFM**

- Postural change (eg. drop head forward)
- Back/abdominal breathing
- Sniffing
- Pursed lips breathing (Blager, 2002)
- Yawning (into pharynx, not jaw!)
- Relaxed breathing with jaw relaxed, tongue forward, suprahyoids neutral
- Prolonged ‘sssss’ (Mathers-Schmidt, 2004)
- Activity-based breathing (eg. Athletes)
Specific Techniques – Cough/Throat-Clearing (Zelazni, CASLPA, 2013)

- Ice chips
- Cold/hot water
- Hard candy (sugar-free)
- Swallow
- Count to 5
- Sniff in, pursed lips/"ssss..." out
- Walk, jump, skip, dance...

3-pronged treatment for ILS as CSS

Minimize Triggering Stimuli External & Internal
- ID Triggers
  - Maximize Reflux Management!
  - Maximize Compliance

Re-Program the Laryngeal Motor Responses
- Desensitize
  - Motor Re-learning

Re-Program the Central System
- Centrally Active Medications

Pharmaceutical/Chemical Rx

- From Chronic Pain literature:
  - SSRI antidepressants
  - Tricyclic antidepressants (side effect dry mouth)
  - Baclofen, (centrally acting anti-spasmolytic)
  - Gabapentin (antiepileptic)

- Botox
- Exercise (Endorphins!)

Emotional Factors

- May need to recognize links between sensory triggers and psychological events
  - Eg. Olfactory memories triggering Sx

- May need to recognize/manage emotional awareness level

- Address psychological factors at current level of emotional awareness (eg. physical Sx)
**ILS: Clinical Example**

- 32 year old single female seen with sudden onset of intermittent "choking", inspiratory stridor, triggered by perfume, disinfectants. PVFM triggered by FEEV, otherwise normal lx. Poor posture: head retraction, jaw jut, adducted scapulae.
- Sx started shortly after foster mother’s death. (Aged 12, ran away from family of origin and strict, fundamentalist religious commune. Possible sexual abuse, but no conscious memory…)
- (Foster) mother was loving, but had increasing Sx from congestive heart failure.

**Emotional Awareness**

- One week prior to mother’s death, a friend suggested death imminent; Pt. briefly experienced sadness (Level 3)
- After death, no experience of sadness
- Onset of Throat Sx (Level 1)
- Emotional development arrested?

**Psychological factors…**

- Childhood background indicates (likely) lack of secure attachments to caregivers in family of origin = compromised development of affect regulation pathway (orbitofrontal → limbic system)
- As a result, experiencing emotions overwhelming for her as she is unable to process affect; instead, she develops an avoidant pattern and consciously/unconsciously shifts attention away from attending to emotion = low emotional awareness
Management Approach

- Psychotherapy:
  - Develop therapeutic alliance: trusting, secure attachment with therapist
  - Give her tools to tolerate emotional distress: breathing exercises, relaxation strategies, mindfulness exercises
  - Help her develop the emotion processing pathway:
    - Mindfulness: bring awareness to the physical experience of emotions (level 1)
    - Help identify & label emotions (level 3 +); dialectical behaviour therapy can be useful here

“Physical” Therapy (SLP):

- Explanation of mechanism involved in paradoxical laryngeal movements and paradox with normal phonation
- Relaxed breathing awareness during postural changes: supine; head and torso dropped forward; “back breathing”
- Postural awareness: head-neck release; extinguish jaw jut during inspiration
- Vocal fold abduction activities with FNPLS biofeedback (sniffing; relaxed inspiration focusing on movement in back)