Confident, modern dysphagia practice

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Goals of evaluation

• Discover if anything is wrong
• Why its wrong if it is
• What to do about it, when and with whom
• For how long
• With what expectations

Goals of dysphagia management

• Safe nutrition
• Adequate nutrition
• Enjoyable nutrition
• Alone or in combinations
Managing these goals

• Achieving all three is our dream
• Often incapable of achieving all three
• Achieving one may frustrate others
• So need to be rank ordered for the individual patient
• In the easiest case the pt will have set the course with advanced directives
• But many don’t have advanced directives

One challenge

• Not all the compensatory or rehabilitative approaches are compatible with all three goals
  – Thickeners may threaten adequacy, enjoyment and even safety
  – Tubes in some may threaten all three
  – Enjoyment may come at the potential expense of safety or adequacy
  – Safety may come at expense of others

What’s to be done?

• Run screaming into the night
• MBA
• Continue to seek the most solid, data-based approach to individual decisions available
• Self-examination of degree to which personal beliefs influence decisions
• And learn tolerance for ambiguity
Time to add another

- Neuroprotection-exercises to
  - Slow appearance of signs
  - Slow deterioration
- Should be standard of practice in many neurodegenerative diseases
- Here are some specifics

Neuroprotection

- Even in PD results are not unanimous, of course
- But it looks too promising for us at UF to ignore
- References
  
  - Suchowersky et al. (2006). Neurology
  - Yacoubian et al. (2010). Cell death Dis

Thus at time of diagnosis referral to SLP for discussion and home program as pt desires is the norm

Our program

- Four parts
  - General exercise such as walking
  - Modest swallow mechanism strengthening
    - As can be done with
      - Expiratory muscle strength training
      - Maximum performance training
  - Range of motion
  - Skill training (target practice)
Goals for clinicians become trainers of cells

- Principles
  - Use it or lose it
  - Use it right and improve it
  - Specificity matters
  - Salience matters
  - Time matters
  - Age matters
  - Intensity matters
  - Repetition matters
  - Interference
  - Transference
  - And for muscles must OVERLOAD

References

- Rothi et al (2008). Neuroplasticity and rehabilitation research for speech, language, and swallowing. JSRHR, 51, S222-S224
- Ludlow et al (2008). Translating principles of neural plasticity into research on speech motor control
  - Conference the brain child of Leslie Gonzalez-Roths

US pitiful shape

- One patient
- 254 professional responses
- Few standardized assessments-mostly self-generated
- 47 different treatment suggestions for pt
- And 90 different treatment combinations
  - Carnaby & Harenberg (2013). Dysphagia, 28, 567-74
But maybe not hopeless

- Recent survey of US SLPs
- 206 SLPs responded with evaluation and treatment recommendations for two patients
  - One with UES dysfunction only
  - Second with UES and “pharyngeal weakness”

Treatments recommendations

- 64% for 1 and 88% for two recommended rehabilitation
  - ? The milder the less likely to receive rehab? OOOOOPS
- For one in order of most frequently recommended
  - Shaker
  - Effortful swallow
  - Mendelsohn
- For two
  - Effortful
  - Shaker
  - Tongue hold

So

- What do you think?
  - Shaker
  - Hard swallow
  - Mendelsohn
- Make some sense right?
- Lets look at a patient
However

- Hard swallow may be the least direct

- Traditional covered
  - Head raise
  - Mendelsohn

- Newer methods
  - Towel tuck
  - Chin tuck against resistance

Pt sample for discussion

Normal UES opening

- UES relaxes

- Anterior-superior movement of hyolaryngeal complex in part responsible for opening

- Intrabolus pressure also critical
  - Reason why tiny boluses sometimes mislead
Comic strip

- Selected muscles including mylohyoid, geniohyoid and anterior belly of diagastric elevate the hyolaryngeal complex
- Laryngeal structures anterior attachment of UES

Result

- With movement of hyolaryngeal complex opening of the UES occurs
- Failure of this movement compromises UES opening
- Other forces such as failure to relax can also influence of course
- Can only infer mechanism with fluoro unless combined with manometry

Muscles to treat
Head raise: The exercise

- Purpose: strengthen the suprathyoid muscles to elevate the hyolaryngeal complex
- The exercise is described as an isometric/isokinetic exercise
  - Isometric: Strengthening by pushing against another body part or fixed object—little lengthening of muscle
  - Isokinetic: Strengthening in which length changes while resistance remains relatively the same—biceps curl is classic example
  - Head raise portion fits the definition

HERE IS THE WELL-KNOWN POSTURE

Three, one minute head raises with hold followed by 30 quick raises

Candidates

- Those with failed opening of the UES because of inadequate relaxation
- Those with inadequate opening of UES because of inadequate movement of hyolaryngeal complex
- Included are brainstem patients
- And any neurodegenerative disease in which weakness especially of pharyngeal and upper esophageal muscles is present
  - Dystrophy is a classic example
The technique

- Lie flat with shoulders against a firm but not uncomfortable surface and then elevate head (only) and look at your feet
- Then one of two variations
  - Do one to three times in groups of 30 followed by 3 one minute holds separated by one minute
  - Or do the three minute holds followed by 30 quick elevations

The technique

- Duration is six weeks (min)
- Practice is every day
- Intensity can vary from one total set per day to three
  - If possible for the pt three sets is preferred
  - In general we do not prescribe the right intensities

The data

- First in normals
- 31 healthy geriatric volunteers randomized to shaker or sham
- The Shaker group after six weeks got improved opening of UES and in laryngeal excursion
More data

- 19 patients with pyriform residual and aspiration because of reduced UES opening
- 17 of 19 got good enough to move to oral nutrition from tube
- Effects were apparently retained

And more

- Another group of mixed patients
- N=27 tube fed patients
- 6 weeks of tx
- All improved
- All maintained improvement at 12 months

Spectacular results

- The group calls for RCT
- The group calls for RCT
- Yep
- And its now been done on a small basis
The study

- N=19 stroke and head neck cancer
  - All aspirating for at least three months
- Randomized into 6 weeks of Shaker (30 followed by three one minute)
- Or traditional
  - Supersupraglottic swallow, Mendelsohn
  - Yawn and hold; retract tongue and hold
  - Practiced 5 minutes 10 times/day

Results

- Greatest changes in aspiration in Shaker group
- Many and significant changes in swallowing physiology (duration measurements primarily) in the other group

Study recommendations

- If aspirating use Shaker
- If reduced range of pharyngeal movements but no aspiration use the other package
Even a systematic review

- Antunes & Lunet (2012). Gerontology, epub
- Strong support for tx
- Influences
  - Increased anterior movement of larynx
  - UES opening
  - Elimination of several signs of dysphagia

Permutations

- Modifications including modifying the decline
- Using light padded weights on head to increase the load
- But no data for either

Challenges

- Frailty
- Cervical and other spinal issues
- Cardiac abnormalities
- Weakness, severe
Mendelsohn-the method

– Logemann Swallow normally and when you feel your voice box go up grab it with your throat muscles for a count of three before relaxing
  • So is that your instruction?

– One quick clinical test to see if it is going to be helpful
  • Manually elevate the pts larynx during a swallow

Mendelsohn-permutations

• Clinician executes the maneuver while pt is feeling clinicians throat
• Pt and Cl monitor pt’s throats during attempt
• Cl provides knowledge of performance
• Repeat and redemonstrate if necessary
• Use sEMG
• Manual resistance may add a strengthening component

Mendelsohn-when

• When UES opening is reduced in extent and/or duration

• When dangerous residual in pyriforms

• Primarily secondary to reduced anterior and posterior hyolaryngeal movement
Goals

• May increase endurance

• Probably primarily a skill task at first but if done intensively and for a long period of time probably strengthens

• Resist laryngeal elevation and may turn it into a strengthening task

Selected data


• Huckabee & Cannito (1999). Outcomes of swallowing rehabilitation in chronic brainstem dysphagia...Dysphagia, 14, 93-109

• Crary et al (2004). Functional benefits of dysphagia therapy...Dysphagia, 19, 160-4
  – These studies all report sEMG assisted biofeedback as part of procedure

Recent data


• N=18 randomized to
  – Two weeks of treatment followed by two weeks of no treatment
  – Or the reverse

• Treated twice daily for 45 to 60 minutes with attempt to get 40 and settle for 30 swallows per session
Findings

• Duration of hyolaryngeal movement increased during tx and decreased during no treatment
• Same with duration of UES opening
• Extent of UES opening increased but not significantly
• No change in pyriform sinus residuals or aspiration
  – OOOPS

Lesson

• Mendelsohn has physiologic effects
• But some of the assumed signs of reduced hyolaryngeal and UES activity such as residual may not
• Thus rethinking the interpretation of some signs in some pts is necessary
• And combining with other methods may be useful
  – Such as hard swallow, Masako

Follow-up

• McCullough & Kim (2013), Dysphagia. Epub ahead of print
  – With same cohort of patients demonstrated improved coordination of swallow structures
• Peck et al (2010). Cortical activation...Laryngoscope, 120, 153-9
  – Confirm greater activation of cortical swallowing structures during Mendelsohn and effortful
Cortical swallow centers

Towel tuck

- Developed clinically a decade ago and seeking money to study
- Roll up a bath towel
- Place up against neck under chin
- SQUEEZE DOWN (isokinetic)
- Swallow hard
- Can add
  - Effortful laryngeal valve (grunt)
- Created as alternative to the more difficult head raise

Effects

- The squeeze may strengthen the suprahyoid muscles critical to opening of UES
- The hard swallow may condition oral and pharyngeal muscles
- The valsalva with breath hold may condition larynx
The method

• Swallow sip of water if safe
• Place towel under chin and try to hold it with squeeze and not with hands
• Swallow hard
• Rest for 10-15 seconds
• Repeat
• Try for 100 repetitions per day in groups of 4
• Six days per week
• For as long as it takes

If adding valsalva

• Sip of water
• Quick valsalva
• SQUEEZE
• Swallow HARD
• Rest
• Repeat

How to know if it is working

• First you pick some symptoms that you know the frequency or severity of
• We use SWAL-QOL symptom profile
• You make sure pt and caregiver are tuned in
• You have them keep a diary of instances
• Usually if method is going to work you will see results in one to six weeks
Permutation


Effects

• They say significantly greater muscle activity measured with sEMG during CTAR than during Shaker
• Admit to many weaknesses of their study
• But variations of it may be more appropriate to many frail men and women with dysphagia

Now to prepare for other treatments

• What are requirements for contemporary confident practice?
• Using the previous case as an example throughout
Modern practice depends upon

• Training
  – If extensive
  – And not from the 70s

• Psyche
  – Tolerance for ambiguity
  – Humility
  – Curiosity

Depends on

• Knowing principles of neuromuscular plasticity

• Knowing what the methods accomplish

• Knowing the pattern of swallowing difficulty to be txd

• Knowing the treatment data

Several collections of data

• Frymark et al (2009). Evidence-based systematic review...JRRD, 46, 175-184
  – Discussion of their procedures in collecting and evaluating data

  – Review of the data on normal
  – Normal groups often used in early days of tx development
Data in dysphagia

  - Neurologic populations
  - Evidence in support of
    - Chin tuck
    - Side lying
    - Head rotation
    - Mendelsohn
    - Supraglottic
  - Less strong evidence for
    - Effortful
    - Supersupraglottic

Other special populations

- Prophylactic exercise during chemoradiation
  - Can reduce negative effects on muscle and movement
- Now the standard practice in most advanced medical centers
- The usual package contains the usual suspects
  - Hard swallow, Mendelsohn, Supraglottic, and so on

How to judge your education

- If it emphasized
  - The SLP as a trainer of cells
    - Rehabilitate rather than compensate unless rehab ABSOLUTELY IMPOSSIBLE OR CONTRAINDIANTED
- There are no bad SLPs only bad training
What would you have done?

• 55 year old person with PD admitted for infection

• Referred for swallow and was aspirating

• Someone recommended feeding tube and not given any rehab or even plan for follow-up

Not best decision most times

• A tube is not a treatment

• A tube will not prevent aspiration

• A tube once in is very hard to d/c

• A tube without concomitant rehab even if it is only very gentle is a dangerously incomplete approach to management

Compensations

• Thickened liquids most frequent strategy for "managing aspiration risk"
  • Garcia et al (2005). Thickened liquids...AJSLP, 14, 4-13

• Texture modifications are unpalatable and pts are likely to be dehydrated and have reduced nutritional intake
  • Sharpe et al (2007). Thickened fluids...Dysphagia, 22, 193-203
On compensations

• Need to recognize that our frequent use of compensations such as postures and thickeners
  – Has convinced many non-SLPs that they can just use these and save the referral
  – Nothing could be farther from truth

That study showed

• In groups of demented, IPD and demented IPD, that chin tuck and nectar and honey thick were unlikely to reduce aspiration
• And that individual patients from all three categories reacted idiosyncratically
• One-half of pts received no benefit from any of these compensations
• Leading authors to recommend we look for other treatments

Hear Hear

• Try rehabilitation and we will talk about other methods including EMST
• But wait, people say, dementia makes such treatments impossible
• Depending on amount of dementia yes
• For active txs but some of our treatments are passive
  – Sensory stimulation in its various forms
  – May be the best choice for the more severely demented
NPO

- NPO and tubes or thickened coffee and pureed prunes were the 1970s
  - If pt aspirated on exam
  - Even if pt was at risk for aspiration
- NOW
  - Know that tubes have risks
  - Altered diets have risks
  - Aspirators will aspirate
- So its about judging relative risk

Clinician’s psyche

- Can never know for sure even about something we once thought was so clear
- Consider aspiration
- Not all aspirators get sick
- So who does and who doesn’t

Who gets sick?

- Relationship of aspiration and pneumonia is “tentative”
  - Martin et al. Dysphagia, 1994

- Not all aspirators get sick
  - Only 5 of 26 aspirators got sick
    - Schmidt et al, Dysphagia, 1994
Langmore’s data

• Langmore et al, Dysphagia, 1998
  – Dependent for oral care
  – Number of decayed teeth
  – Number of medications
  – Tube feeding
  – Dependent for feeding
  – Now smoking
  – Multiple medical diagnoses

Said another way

• Risk factors are
  – Cognitive impairment
  – Dependence
  – Lack of mobility
  – Pulmonary and cough compromise
  – Malnutrition/dehydration
  – Immune system compromise
  – Multiple medical diagnoses

Use of these in clinic

• Can include an analysis in your report of the number of these risks pt has

• Thus providing a data base for decision making

• And as a way of showing you know that aspiration is a necessary but incomplete reason for pulmonary complications
Remember

- Aspirators will aspirate
- Dysphagia with aspiration necessary but incomplete explanation for most pulmonary illness
- Making patients NPO will not prevent aspiration
- Despite all we’ve been taught

Diet recommendations

- Clinicians act are taught they know how to choose diet
  - But they do not with any confidence
  - Groher recognized this in the 80s but was ignored
- Reliability has been confused with validity
  - Two clinicians can often agree on what THEY think a diet should be
- The proper diet is not what we say it is
  - It is what pt wants and can tolerate

Thus

- Need tolerance for ambiguity
  - More likely to be unsure than sure
  - Unless you ignore the pt and just do what you’ve been taught
- Need to be humble
  - Chance of making a mistake is very high
Here is a place for confronting ambiguity

- Decision triggers for NPO
  - Risk of aspiration
  - Aspiration observed on exam
  - Risk of illness from aspiration
  - Illness from aspiration

Way to evaluate your practice

- The first is obviously very conservative
- The fourth is extreme in the other direction
- One trigger does not fit all

- Even for a given pt at different times in course of illness
- And you can never be sure you are doing the right thing

Modern, confident practice depends on

- Knowing patient’s disease
- An hypothesis about why each patient is having a swallowing problem based on what you know about disease
- And about how pulmonary status protection mechanisms might be influenced as rehab is underway or if it is impossible
- Characteristics of swallowing deficit
- And how the characteristics of each disease will influence response to treatment
- And about what method(s) from our substantial array can be expected to address that hypothesized condition or those conditions
Confine to neurologic disease
• More than 600
• If any one of them alters bulbar or respiratory function then dysphagia can result
• So how do you cope with several hundred etiologies?
  – You look for commonalities

What causes the dysphagia
• Weakness leading to reduced range and force of movement
• Abnormal (too much or too little) tone leading to reduced range and force of movement
• Dycooordination leading to unpredictable movement control
• Altered rate (too fast, too slow, too variable) leading to impaired timing of movement
• Adventitious or irregular, unpredictable movements as in chorea leading to poor control of movement

Airway protection
• Two of most critical are tight and timely airway closure
• And cough
Characteristics of the dysphagia

- Highly variable across patients and diseases
- In most will have some mix of
  - Inadequate bolus flow
  - Misdirection of bolus flow
  - Abnormal timing of bolus flow

Characteristics influencing response to treatment

- Of course severity of dysphagia is one
- Others are related to
  - Cognition
  - Affect
  - General health
  - Social supports

Return to our classification of treatments

- Treatments can be divided into
  - Compensation and rehabilitation
    - Rehabilitative ones change
      - STRENGTH/ENDURANCE
      - SKILL
      - COMBINATION
Appropriateness of compensations

- When rehab is impossible
- When it will be protracted
- When patient requests
- When the effects of a compensation may be superior to those for rehab

Useful metaphors for strength, endurance and skill training

- Strength and endurance txs are the equivalent of weight lifting

- Skill txs are equivalent to learning to ride a bike

Why care?

- Clinical significance
- Influences timing of what you expect
- Influences prognosis
- And need for and type of follow-up
So let's put all this together to create another treatment plan.

Let's choose PD because it is so common and easy to generalize from.

Wait, wait you say

- I very seldom see PD
- Not a problem—it's mostly not about the disease
- But the reason(s) for dysphagia which are similar across many different conditions
  - For example, reduced force and range of movement in PD lead to residuals, aspiration and likelihood of aspiration pneumonia

Parkinson’s disease

- Caused by loss of dopaminergic neurons in the substantia nigra pars compacta of the basal ganglia
- Classic characteristics summarized as TRAP
  - Tremor—impaired steadiness
  - Rigidity—increased tone
  - Akinesia (slow or reduced movement)—altered timing
  - Postural instability
  - + weakness although controversial
- Disease begins in brain stem and ascends the neuroaxis to end in cortex
- Aspiration pneumonia one of three major causes of death
So-called non-motor signs

- Apathy
- Depression
- Reduced sense of smell
- Fatiguability
- Impaired ability to attend to and evaluate internal cues
- All can influence response to treatment

Signs of dysphagia and reasons

- Dysphagia usually not an early sign but present in nearly 100% in course of disorder
- Oral stage inefficiencies in preparing and moving bolus posteriorly
- Diffuse residual throughout pharynx
- Oral stage more impaired than pharyngeal until late
- Penetration/Aspiration
- Caused by rigidity leading to reduced range and force of movement
- Compounded by apathy, depression, executive dysfunction, poor ability to monitor

So what treatments

- Specific cause of dysphagia
  - Reduced endurance, sometimes weakness
  - Certainly reduced range of motion
- What methods do we have to rehabilitate?
First
• These patients, like all patients, deserve attempted rehabilitation
• If you send these patients home with a bunch of compensations you deserve any criticism that comes your way
  – Actually your teachers probably do, because most clinical failures are related to failed education

What rehab programs seem best?
• Respiratory muscle training
  – The tools for accomplishing this training are probably at least in part-if done alone and intensively enough-strengthening programs
• Maximum performance training
  – Probably part strengthening and part skill training

Furthermore
• EMST and IMST are the two most likely forms of respiratory muscle training
• May be-along with LSVT or other maximum performance training-the most likely methods to be simultaneously helpful for both swallowing and speech
• Especially if done simultaneously
EMST

- Pt blows into a device fitted with a one-way spring-loaded, pressure release valve
- Amount of pressure can be controlled
- Training based on 70%-80% of maximum expiratory pressure
- Or on clinical judgement

Another view

- This is a good diagram of the device
- At left end (in this view) is the cap that can be tightened or loosened to influence pressure

Training load

- Can measure maximum inspiratory and expiratory pressures and train at 70-80% of max
- Using a spirometer
- Or can set clinically
Cheek lip press

- Critical to maximize flow thru mouth
- Minimize through nose
- Enhance lip seal

Treatment

- EMST set at 75% of MEP (or clinically)
- Nose clip and cheek/lip press
- 25 trials per day in five groups of five
  - I prefer more reps in two groups
  - Five sessions per day is burdensome
- Five days per week
  - I prefer 6
- Five weeks and I prefer 3 months
The Rationale

Randomized clinical trial-EMST

- Randomized, prospective, double-blinded trial with Hoehn and Yahr 2-4 stages

Methods

**Participant Demographics**

n = 60

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Prospective, blinded, randomized, sham-controlled, clinical trial
Randomly assigned to active or sham treatment group
Baseline swallow assessment followed by 4 weeks of EMST/sham intervention
Post intervention assessment followed completion of treatment arm

Outcomes:
- Maximum Expiratory Pressures
- Swallowing function
- Voluntary cough function

Results: Swallowing Measures

- EMST group: hyoid displacement increased at all measured swallow events
- Significant at: UES opening, UES widest, UES closure
- SWAL-QOL scores increased significantly for both groups, p=.007

Results: Maximum Expiratory Pressures
Results in words

- P-A scores significantly improved for the tx group
- 3 tx pts had decline in PA in tx group and 16 in sham
- SWAL-QOL increased in both and most in tx

Conclusions

- Device can be used to treat swallowing in PD
- Has physiologic and quality of life implications
- One of first randomized controlled trials in dysphagia, called Level I evidence
- Don’t know durability of results
  - Strengthening likely to require maintenance
  - Especially in degenerative disease
- Did not use with most severe stage PD

Interesting feature

- Penetration-aspiration events were decreased by a tx ostensibly focused on respiratory mechanism
- Why?
  - Respiratory mechanism bigger contributor to P-A than traditionally thought
  - Wider influence of blowing than hypothesized
  - Maybe one active ingredient is effort
Cough in PD

• Pitts et al (2009) Utilizing voluntary cough to predict penetration and aspiration...Chest, 135, 1301-1308
• Two findings
  – Voluntary cough predicts penetrating and aspirating PD pts
  – Voluntary cough competence is improved by EMST at the previously discussed frequency and duration

Masked facies

• Data showing that computerized images of facial expression reflect improvement in masked face
• In mild and moderate patients with PD
• With caregivers and patients reporting improved communication
• IMST used
  – Unpublished data by Bowers (2013)

Our program one more time

• 75% of maximum expiratory effort
• 25 reps divided among at least two sessions
• Six days per week
• For 4 to 12 weeks, OR LONGER, depending on response
• Visit clinic once per week for adjustment and drill
Contraindications

- Untreated cardiac abnormalities
- Untreated HTN
- Till MD approves post surgery anywhere in body
- RECALL: this is real exercise

Remember the three

- Three pts had declines in PA performance
- What do they teach us?
- Working that out
  - Possibly had too much overload or the wrong duration of tx
  - Had different underlying pathophysiology
- For now gives us something to say to men and women with PD-90% of a sample got better

Need rehab programs

- Because medical surgical txs often do not help and may hurt
    - Meta-analysis, N=5 studies with aspiration as major outcome
    - Levodopa not associated with swallow improvement
    - 17 of 19 patients developed worsening dysphagia after DBS
However

- All these conclusions are in need of replication
- Wanted to give you a heads up, however
- Devices being used in vent units to aid weaning
- Used in voice clinics
- In professional singing programs
- With asthmatics
- And in other environments and populations
- This train has left the station

Worry About The future

- SLPs are hearing about this
- Trying it sometimes even unsuccessfully on themselves
- Are unsuccessful and reject the method
- Or try unguided with a patient, fail, and reject the method
- Or they try it without transfer techniques and person gets stronger but nothing else changes

Recommendation

- EMST is not a cure-all
  - Will have to be joined by one or more skill treatments
- But it is a powerful new tool
  - Including for **reduced cough**, a common sign in a variety of neurodegenerative diseases
- Because of Neurology publication going to spread into clinics rapidly
- Clinician training can be accomplished in one day
IMST

- Inhalatory muscle strength training
- Some say this is the preferred modality for those with reduced respiratory support
- Diaphragm is main muscle
- Inhalation has substantial influence on exhalation
- Amount of air and to a degree control of flow
- For now for sure in cases of diaphragm weakness

IMST DEVICE

Order from:
WWW.RESPRONICS.COM

Figure 2

This device is calibrated for 0 to 40 cm of H2o
So good for very weak

Use of IMT

- Notion is to get quick, smooth, deep inhalation using diaphragm
- Followed by long controlled exhalation
- These two actions roughly parallel speech breathing especially by some treated dysarthric speakers
- Need to inhibit exaggerated shoulder raising and other maladaptive responses
- Use nose plug
- Systematically increase resistance based on pt performance
Maximum performance training also appropriate

- LSVT the most popular but must be certified
  - Exhortation and practice to be loud during production of progressively longer productions of “ah”
  - Another critical exercise is the increasingly competent and extended production of pitch change on “ah” or its equivalent, from the lowest to the highest possible pitch
  - Variations of this pitch change idea are part of McNeal Dysphagia Program developed by Crary and colleagues
    - Also requires certification so can’t teach

LSVT—another permutation

- Farley et al describe the development of a treatment that emphasizes not only getting louder but also making bigger reaching and walking movements
- They are calling this treatment Big and Loud. It, too, requires certification training
- The essence of the method is that patients are given intensive practice in walking, reaching and other daily tasks with much extended amplitudes

A small N study

- In PD
  - Decreased oral transit time and reduced tongue “rocking”
  - Reduced residual in oral stage
  - Improved swallow efficiency
    - El Sharkawi et al (2002). Swallowing and voice effects...J Neuro, Neurosurg Psychia, 72, 31-6
Interpretation of these findings

- May have increased range of motion although this was not measured directly
- Authors say “…improved neuromuscular control of entire upper aerodigestive tract…”
- Also say some oral stage effects “may reflect an overflow of effort from the habitual increase in phonatory effort…”

Maximum performance training

- May influence both skill (learning to use enhanced effort) and endurance
- The idea is simple: have pt perform quality maximum performance tasks
- An absolute minimum of 25 per day, five and preferably six days per week

Our steps

- Get pt in best posture-usually sitting upright
- Have pt increase background of effort-valsalva
- Have pt get to best size-appropriate inhalation
- Check that inhalation
- Then start maximum duration of vowel
  - With attention to consistent airflow, loudness and quality
  - Repeat
Steps, cont.

- Cue pt to the sound and feel of this maximum performance mode
- Carefully monitor for laryngeal hyperfunction, pain, dizziness, other discomfort
- Have pt get a timer
- URGE maximum, consistent performance
- Try to transfer the same intensity and effort to speech using short sentences heavy on plosives

Caveat

- Purely mechanical treatments for dysphagia in both degenerative and non-degenerative disease will be less than maximally successful in the long run

  * UNLESS COGNITIVE TASKS ARE INCLUDED THROUGHOUT
  * Treatment is not motor—it is cognitive motor

How to make cognitive

- Most important is helping pt become own, best clinician
- Means planning, evaluating and self-correcting
- Clinician who takes responsibility for these slows patient progress and limits generalization
**Transition**

- Those are the newest of the treatments
- Let's end with a discussion of tube feeding

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**Some thoughts on tubes**

- Two NHs in South Carolina with 41.8% of residents on tube in one and 10.7 in other
- Low
  - Homelike atmosphere
  - Food important part of socialization
  - Trained staff at mealtimes who valued hand feeding
  - Advance care planning with family
  - Palliative care options

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**Mouth as environment**

- Especially important in swallowing
  - Martin DRS, 2012 on both society and Mouth cares
- Good dentition aids general health and function
- As does adequate saliva
Its often most about oral health


Prandial aspiration and pneumonia

• Read Feinberg et al: Dysphagia, 1996
• Studied 152 frail, elderly NH residents for up to three years
• All pts had VFSE and those with objective difficulty had the range of treatment

Conclusion

• “Most pneumonae in the institutionalized elderly are believed to be secondary to microaspiration of oropharyngeal secretions that have been pathologically colonized”
• Authors specifically say that they do not think those selected for tube feeding were more debilitated than others in the study
Generalization

- Prandial aspiration should not be the assumed cause of pneumonia in any patient
- Among the other causes are aspiration of oral bacteria
- Aspiration of refluxed or vomited stomach contents
- Aspiration of blood
- Colonization may occur in 70-75% of critically ill patients

Evaluation suggestions

- GERD history, including how well controlled
- History of vomiting in relation to pulmonary complications
- Oral health including condition of dentition
- Whether saliva reduced
- Quality of oral hygiene

Interpretation

- Make the data convince you that prandial aspiration is the villain
Treatment

- Aggressive oral care in both oral and tube fed patients
- A typical protocol
  - Tooth, tongue and oral mucosa brushing using sponge brush and 0.2% chlorhexidine solution
  - Moisturizing mouth with Biotene OralBalance
  - Salivary gland massage

Salivary glands

Massage
Effect

- 63 elderly bedridden, tube-fed in oral care or standard of care (no protocol nor rigid schedule of oral care)

- “..the results of the present study suggest that daily oral care for tube-fed patients who do not receive nutrition by mouth reduced the incidence of pneumonia” (p. 616)
  - Maeda & Akagi (2014). Dysphagia, 29, 616-621

Furthermore

- Similar results for non-tube fed and for a variety of different populations

Also maintaining oral nutrition is a factor

- STRATEGIES FOR INCREASING ORAL
  - Use strong flavors
  - Use varying types of foods
  - Liquid supplements 2 hours before meal rather than with meal
  - Make food available
  - Lengthen meal time
  - Keep supplements at bedside
  - Pleasant eating environment
Criteria for tube in elderly

- Read: Ciocon, Dysphagia, 1990
- Malnutrition for five days despite above and attempted finger food delivery
- Severe dysphagia
- This may be more acceptable to many practitioners
- But even here need consent to use non-oral

ANOTHER APPROACH

- Emphasis should be on prevention especially with those having dysphagia
- Approach
  - Aggressive rehab of the swallow and compensations as appropriate and necessary
  - Aggressive oral hygiene
    - Yoshino et al. JAMA, 2001

Tx cont

- Tube feeding, short term if significant improvement is expected
- Ace inhibitors to prevent breakdown of substance P
- Avoid sedative medication if at all possible
SLPs and risk

- N=731 US SLPs queried about tube feeding in dementia
- Results
  - 42.1 said moderately or well trained
  - 22% knew TF unlikely to prevent aspiration pneumonia
  - 70% still willing to recommend because of presumed limited risk

But here are the potential complications

- Infection
- Tube disintegration
- Clogging
- Leakage
- Ileus
- Aspiration
- Peritonitis
- Premature removal
- Buried button syndrome
- Gastrocolocutaneous fistula
- Necrotizing fasciitis
- Hemorrhage

Thus there are NO risk free options in dysphagia and that is one reason dysphagia makes for such interesting practice
Time to quit

• Practice is evolving

• The most evolved are most likely to help patients simultaneously toward all three of our swallowing goals

• And it is only going to get better