Objectives

- Discuss common terminology
- Identify challenges and barriers that make communication difficult
- Identify strategies for improved communication

Acronym Activity

- IEP
- RTI/MTSS
- OPM
- LEA
- FFVN
- VPI
- BMT
- TBI
- PCN
- PMSV
- ASP
- HIE
- NEC
- NKDA

Defining terms

- Collaboration
- Communication
- Inter disciplinary
- Multi disciplinary
- Trans disciplinary

Defining terms

- Educational relevance
- Qualification/Eligibility criteria
- Service delivery models
  - Push in vs. pull out
  - Clinical model
  - Individual therapy vs. group
  - Family vs. peer involvement
  - Primary coaching model
Setting

• We are all SLPs but we have different roles
  – Where we are.
  – Who we are.
  – Why does it matter?

• All settings have their own challenges
  – Time
  – Productivity
  – Caseload

Identification

• What we do
  – Feeding/swallowing
  – Articulation
  – Language
  – AAC
  – Generalization
  – Transition
  – Administration

• Stec and Slone shared during their ASHA presentation in 2008 that the biggest identified challenges were:
  – Medically Complex Children
  – Prescriptive Reports
  – Many Providers of Information
  – Non-Specific Information
  – Unique Environment Demands
  – Ivory Tower
  – Parent Report/Expectations
  – Missing and Missinformation
  – What did we miss?

• Stec and Slone identified challenges in their community, help identify ours…
  – Please take a few minutes to fill out the survey provided in your folder.

• All settings have their own challenges
  – Time
  – Productivity
  – Caseload

• public and private schools
• hospitals
• rehabilitation centers
• short-term and long-term nursing care facilities
• community clinics
• colleges and universities
• private practice
• state and local health departments
• state and federal government agencies
• home care
• adult day care centers
• centers for persons with developmental disabilities
• research laboratories
• institutes and private agencies

http://www.asha.org/careers/professions/sld/
Advances in Pediatric Speech-Language Pathology: Challenging Disorders

Identification

• Why is communication between med/community important
  – Improves patient outcomes
  – Provides opportunity to create comprehensive therapy plan
  – Provided opportunity to clarify diagnostic and progress information

Suggestions

• “The value of a direct phone call by the medical SLP to the school-based SLP, or vice versa, to assist with communication cannot be underestimated.”
  • Routine direct communication between providers.
  – Appropriate use of approved release of information forms.
  – Communication regarding specific concerns Kane-Miller 2009.

Suggestions

• Additional suggestions:
  – Determine for what reason you are communicating
  – Determine how often communication is needed
  – Determine optimal mode of communication
    • Phone, Email, Mail, Parent, Fax, Patient

Suggestions

• Suggest optimal times/days for communication.
  • Consider asking general questions without patient identifiers.
  • Persistence pays off.

Suggestions

• Get the most out of your effort
  – Precise communication
  – Results
  – http://www.youtube.com/watch?v=JwjAAgGi-90

Points to ponder

• We can learn a lot from the rabbit.
  • The way in which we ask and share information has an impact on the patients we serve.
  • Collaboration is achieved through willingness to communicate and determining the most achievable strategies to relay information.
Points to Ponder

• Kane-Miller 2009 Says “Clearly, there is a need to share resources between the medical and educational settings and to provide opportunities for training and collaboration with professionals outside of the school setting.”

• Kane-Miller 2009 further notes “Initiation of communication is the first step, and then sustaining the communication becomes responsibility of both the educational and hospital SLPs.”

Resources

• References
  – Kane Miller, C. (October 2009) Optimizing Collaboration between Medical and School-based Speech-language Pathologists Managing Dysphagia. Perspectives on Swallowing and Swallowing Disorders (Dysphagia) vol. 18 no. 3 91-96
  – Retrieved 5/29/13 from http://div13perspectives.asha.org/content/18/3/91.full

• Website Resources
  – http://www.youtube.com/watch?v=HZA1_DQBz8Q

Questions?

Dyslexia

Stacy Henn, MA, CCC-SLP
Jennifer Pulikkan, MS, CCC-SLP

What Dyslexia is not...

• It is not a visual problem
  **Differences in visual systems of children with dyslexia appear to be a result of less reading compared to typical readers (brain imaging study eliminates differences in visual function as a cause of dyslexia, 2013)**
  • It does not mean people “see” things flipped, reversed, or backwards
What Dyslexia is…

• Difficulty “breaking the code” to learn how to read and spell
• Language-based difficulties
  (Moats & Dakin, 2008)

**Deficits typically identified in phonological processing: difficulty understanding and using sounds to process written and oral language**

What dyslexia is…

• Dyslexia is a specific learning disability that is neuro-biological in origin. It is characterized by difficulties with accurate and/or fluent word recognition and by poor spelling and decoding abilities. These difficulties typically result from a deficit in the phonological component of language that is often unexpected in relation to other cognitive abilities and the provision of effective classroom instruction. Secondary consequences may include problems in reading comprehension and reduced reading experience that can impede growth of vocabulary and background knowledge. (Lyon, Shawitz, & Shawitz, 2003).

CMH Academic-Language Evaluation

• Parent paperwork
• Parent and patient interview
• Test descriptions
• Administer assessments
• Results discussed
• Report completed and mailed to family

Assessment Tools Administered

• Clinical Evaluation of Language Fundamentals-4 (CELF-4)
• Comprehensive Test of Phonological Processing (CTOPP)
• Test of Word Reading Efficiency (TOWRE)
• Word Identification and Spelling Test (WIST)
• Dynamic Indicators of Basic Early Literacy Skills (DIBELS)

Clinical Evaluation of Language Fundamentals-4

• Measures ability to understand and use spoken language
• Provides insight regarding vocabulary and oral comprehension skills

Comprehensive Test of Phonological Processing

• Phonological Awareness: the ability to understand that speech is made up of individual sounds that can be manipulated.
• Phonological Memory: the ability to store auditory information in the most recent 2 seconds.
• Rapid Naming: the ability to quickly retrieve phonological information from long-term memory.
**Test of Word Reading Efficiency**

- Sight Word Efficiency
- Phonemic Decoding Efficiency

**Word Identification and Spelling Test**

- Assesses fundamental literacy skills
- Reading and spelling regular words
- Reading and spelling irregular words

**Dynamic Indicators of Basic Early Literacy Skills**

- Measures of critical skills that underlie early reading success
- Used in our clinic for early identification of children with potential problems
- Can also be used to monitor response to intervention

**DIBELS continued...**

- Minimal goals for reading success per DIBELS (Moats & Dakin, 2008)
  - Spring 1st grade Oral Reading Fluency 40 words per minute
  - Spring 2nd grade Oral Reading Fluency 90 words per minute
  - Spring 3rd grade Oral Reading Fluency 110 words per minute
  - Spring 4th grade Oral Reading Fluency 118 words per minute
  - Spring 5th grade Oral Reading Fluency 128 words per minute
  - Spring 6th grade Oral Reading Fluency 135 words per minute

**Making the Diagnosis**

Checklist:
- Specific Learning Disability
- Adequate intelligence
- Provided opportunity to learn
- Reading/language/written problems arose from factors within the individual that have a basis in “wired in” aptitudes for language learning and reading (e.g., neurological in nature, not secondary to another diagnosis/disorder)
- Difficulty with accurate and/or fluent word recognition
- Poor Spelling (accuracy) and decoding abilities (of unknown words/poor phonics or letter-sound correspondence and syllable patterns/chunks of longer words)
- Deficit in phonological component of language
- Unexpected in spite of effective class instruction/adequate intelligence, opportunity to learn
- Struggles with reading and/or writing more than other students at same grade/age/ability level

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Recommendations

- For any child struggling with reading and spelling, a multisensory structured language approach is recommended.

Multisensory Teaching

- Visual
- Auditory
- Tactile
- Kinesthetic

Systematic and Explicit

- Program teaches a defined set of letter-sound relationships
- Information is directly taught; no inferential learning assumed
- Mastery required before moving to new information

5 Components of Reading

- Phonemic Awareness
- Phonics
- Fluency
- Vocabulary
- Text Comprehension

Phonemic Awareness

- The ability to notice, think about, and work with individual sounds in spoken words
  (Put Reading First, National Institute for Literacy)
  - Examples:
    - Which word starts with the same sound as….
    - What is the end sound in the word….
    - What are the sounds in the word…

Phonics

- Relationship between the letters (graphemes) of written language & the individual sounds (phonemes) of spoken language
  (Put Reading First, National Institute for Literacy)
  - Also commonly called letter-sound correspondence
  - ** Goes beyond single letter-sound relationships
Fluency

- The ability to read a text accurately and quickly to provide a bridge between word recognition and comprehension.

(Put Reading First, National Institute for Literacy)

Interventions:
- Repeated one-minute timed reading
- Model fluent reading
- Choral reading
- Re-read passages aloud with guidance

Silent Reading

- No research evidence is available currently to confirm that instructional time spent on silent, independent reading with minimal guidance and feedback improves reading fluency and overall reading achievement.

(Put Reading First, National Institute for Literacy)

Vocabulary

- Refers to the words we must know to communicate effectively

(Put Reading First, National Institute for Literacy)

- Picture Dictionary
- Dictionary skills
- Listening to books on CD/audible books

Reading Comprehension

- Ability to understand what is being read

"Putting it all together"

- Level of material presented matches foundational reading skills
- Monitoring comprehension
- Using graphic organizers
- Asking questions
- Summarizing

Resources

- International Dyslexia Association www.interdys.org

Resources Continued…

- Practicing Basic Skills in Reading: One Minute Fluency Builders series by Beck, Anderson, and Conrad (2009) Sopris West
- Getting Up to Speed: Developing Fluency 2nd Edition by Moats and Davidson (2009) Sopris West
- Basic Facts About Dyslexia & Other Reading Problems by Moats and Dakin (2008) The International Dyslexia Association
CMH Contact Information

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References


Questions?

Treatment of Neurogenic Speech Disorders

Linda Ernst, M.S., CCC-SLP

Neurogenic Communication Disorders of Childhood

Congenital
- Specific language impairment
- Autism/PDD
- Cerebral Palsy
- Spina Bifida
- Congenital infections
- Intrauterine teratogens (e.g., TIAI)
- Developmental apraxia of speech
- Childhood subcortical palsy
- Genetic syndromes

Late Degenerative
- Juvenile Huntington’s Disease
- Duchenne’s Muscular Dystrophy
- Friedreich’s ataxia
- Mitochondrial disorders
- Lewy body disease

Acquired
- Stroke (CVA)
- Traumatic Brain Injury
- Acquired epileptic aphasia
- Lewy body disease
- Huntington’s disease
- Schizophrenia
- Epileptic Encephalopathy (EIE)
- Brain Tumors
- Trauma (e.g., head, chest, trauma, abdominal, kidney/ureter failure)

Neurogenic Speech Disorders

Dysarthria
- Includes all processes of speech (respiration, phonation, resonance, articulation, prosody)

Apraxia
- Articulation and prosody are primarily affected (could affect timing of velopharyngeal closure)
Other Neurogenic Speech Disorders

- Acquired neurogenic dysfluency
- Palilalia
- Echolalia
- Foreign Accent Syndrome
- Aprosodia (Right Hemisphere Lesion)

Neurogenic Mutism

- Akinetic mutism (frontal lobe-limbic pathology)
- Coma/vegetative state
- Commissurotomy mutism (severing corpus callosum)
- Seizure-related speech arrests
- Aphasia

Psychogenic Speech Disorders

- Conversion Disorder – actual loss/alteration of volitional muscle control
- Somatization Disorder – recurrent multiple physical complaints and belief that one is ill
- Factitious Disorders – deliberately feign symptoms for uncontrolled, unconscious reasons
- Malingering – deliberate, voluntary “faking” (not a mental disorder)

Conceptual-Programming Level of Speech Production

<table>
<thead>
<tr>
<th>Process</th>
<th>Disorder Affecting Speech</th>
</tr>
</thead>
<tbody>
<tr>
<td>Conceptualization (Cognition)</td>
<td>Cognitive Impairment</td>
</tr>
<tr>
<td>Spatial-Temporal (Linguistic) Planning</td>
<td>Confusion</td>
</tr>
<tr>
<td>Motor planning/programming</td>
<td>Aphasia</td>
</tr>
<tr>
<td>Performance</td>
<td>Apraxia</td>
</tr>
<tr>
<td>Feedback</td>
<td>Dysarthria affecting control circuits? Limbic/right hemi– altered prosody</td>
</tr>
<tr>
<td>Feedback</td>
<td>Dysarthrias &amp; Peripheral sensory-based speech disturbances</td>
</tr>
</tbody>
</table>

Key Differences

**Dysarthria**
- Change in muscle tone
- Speech errors due to poor muscle control of CNS or PNS
- Errors more consistent

**Apraxia**
- Typically normal muscle tone
- Speech errors due to disruption in motor cortex
- Inconsistent errors

**Dysarthria**
- Errors are primarily distortions/omissions

**Apraxia**
- Primarily substitutions, repetitions, omissions, additions, and prolongations
- Imprecise consonants / neutralized vowels
- Errors increase with complexity of motor pattern

Key Differences
### Key Differences

**Dysarthria**
- Slow, labor speech rate
- Speech intelligibility decreases with increased rate

**Apraxia**
- Symptoms not as consistent
- Speech intelligibility may improve with increased rate

### Similarities

- Both may result in atypical prosody
- Both are typically worse with increased complexity of word/connected speech structures
- Both are motor speech disorders

### Types of Dysarthria
- Spastic
- Flaccid
- Unilateral Upper Motor Neuron
- Hyperkinetic
- Hypokinetic
- Ataxic
- Mixed

### Etiology of Dysarthrias

- Spastic (bilateral upper motor neuron)
- Hypokinetic
  - Hyperkinetic (extrapyramidal)
- Flaccid (lower motor neuron)

### Motor Systems of the Brain

- **Direct Activation Pathway**
- **Indirect Activation Pathway**
- **Final Common Pathway (spinal and cranial nerves)**

### Extrapyramidal System

- **Control Circuit** = basal ganglia + cerebellum
  - Hyperkinetic
  - Hypokinetin
  - Ataxic
  - Brain regions that modulate movement, basal ganglia, some major brainstem nuclei, and the cerebellum.
### Dysarthria Symptoms

**(Bilateral Upper Motor Neuron)***
- Reduced Stress
- Imprecise consonants
- Harsh voice quality
- Monoloudness/monopitch
- Low pitch
- Slow Rate/Short phrases
- Strained/Strangled voice
- Hypernasality
  - Spastic Dysarthria Video

**Spastic**
- Unilateral UMN
  - Flaccid
  - Hyperkinetic
  - Atonic
  - Mixed

**Flaccid**
- Unilateral UMN
  - Spastic
  - Hyperkinetic
  - Atonic
  - Mixed

**Atonic**
- Mixed

**Mixed**

**Hypokinetic**

### Dysarthria Symptoms

**(Unilateral Upper Motor Neuron)**
- Stroke is most common cause
- Contralateral lower facial weakness (would involve whole upper & lower face if bilateral UMN)
- Weakness and spasticity present in limbs
- Slow speech with imprecise consonants
- Harsh Voice (about 40%)
- Less frequently: reduced loudness, strained vocal quality, excess & equal stress; hypernasality
  - Video Clip

**Spastic**
- Unilateral UMN
  - Flaccid
  - Hyperkinetic
  - Atonic
  - Mixed

**Flaccid**
- Unilateral UMN
  - Spastic
  - Hyperkinetic
  - Atonic
  - Mixed

**Atonic**
- Mixed

**Mixed**

### Differences between Spastic/Flaccid Dysarthrias

**Spastic**
- "Strained/strangled" quality is key difference
- Less stress/intonation
- Less loudness variation
- Consistently harsh voice
- Slower Rate

**Flaccid**
- "Weak speech" which seems to involve less muscle tension
- More “breathy” quality to voice

### Dysarthria Symptoms

**(Lower Motor Neuron)**
- Imprecise consonants
- Hypernasality
- Breathiness
- Monopitch
- Nasal Air emissions
  - Flaccid Dysarthria Video

**Spastic**
- Unilateral UMN
  - Flaccid
  - Hyperkinetic
  - Atonic
  - Mixed

**Flaccid**
- Unilateral UMN
  - Spastic
  - Hyperkinetic
  - Atonic
  - Mixed

**Atonic**
- Mixed

**Mixed**

### Dysarthria Symptoms

**(Extrapyramidal: Dystonia/Choreathetosis)**
- Less common in children
- Irregular articulatory breakdowns
- Imprecise consonants
- Distorted vowels
- Strained/strangled voice
- Monopitch/monoloudness
- Hyperkinetic Dysarthria in Athetoid Cerebral Palsy Video

**Spastic**
- Unilateral UMN
  - Flaccid
  - Hyperkinetic
  - Atonic
  - Mixed

**Flaccid**
- Unilateral UMN
  - Spastic
  - Hyperkinetic
  - Atonic
  - Mixed

**Atonic**
- Mixed

**Mixed**

### Dysarthria Symptoms

**(Extrapyramidal: Parkinsonism)**
- Rare in Children / may be drug-induced
- Short rushes of speech
- Reduced stress
- Imprecise consonants
- Inappropriate silences
- Monopitch/monoloudness
- Harsh/breathy voice
  - Hypokinetic Dysarthria Video
Dysarthria Symptoms
- Spastic
- Flaccid
- Unilateral UMN
- Hypertonic
- Hypokinetic
- Ataxic
- Mixed

(Cerebellar)
- Equal and Excess Stress
- Irregular Articulatory Breakdowns
- Disordered vowels
- Imprecise consonants
- Harsh Voice
- Loudness control problems (excess variation)
- Variable nasality
- Ataxic Dysarthria - Video

(Any combination of more than one dysarthria)
- All of the spastic/flaccid symptoms plus:
- Distorted vowels
- Excess and equal stress
- Prolonged intervals
- Look for signs of both increased and decreased tone in musculature related to respiration, phonation, articulation, and palatal function. - Video clip

Peeling the Onion
Etiology
- Is the problem paralysis or coordination?

Treatment Technique
Paralysis
Direct or Compensatory Coordination
Compensatory or slowing rate

Peeling the Onion
Etiology
- How long since the injury (is there a favorable prognosis for improvement)?

Treatment Technique
Acute/Positive Prognosis Direct
Chronic/Progressive Compensatory (but may benefit from efforts to maintain intelligibility in degenerative disease)

Duration of treatment
Considerations:
- Underlying etiology / prognosis
- Meet functional goals to improve intelligibility (not fix all that is wrong)
- Pt plateaus or no longer motivated
- Option to reassess for future treatment if new potential or need (e.g., with degenerative disease) emerges

Important Treatment Components
- Improve physiologic support
- Provide Feedback for effective motor learning
- Pragmatic Approach (may need to increase awareness of communication breakdowns)
- Train self-monitoring
- Improve speech by practicing SPEECH tasks
- Drill practice (motor learning must transition from cognitive, associative, then automatic stages)
- Frequent short bursts of practice are better than longer sessions
Peeling the Onion

**Etiology**

- What speech systems are involved in the symptoms I see?

**Treatment Focus**

Treating Symptoms

- Imprecise consonants
- Hypernasality / nasal air emissions
- Breathiness
- Harshness/stained/strangled voice
- Pitch variation
- Stress variation
- Slow or irregular rate
- Loudness control
- Phrase length/juncture

Treating Symptoms

- Imprecise consonants (all dysarthrias)
- Hypernasality and nasal air emissions (velopharyngeal function)
- Breathiness/hoarseness (reduced adduction)
- Vocal harshness/hoarseness or strained/strangled voice (hyper-adduction)
- Pitch variation (laryngeal adduction/vocal fold tension)
- Stress variation (respiratory support, phonation and pitch control)
- Slow or irregular rate (praxis/co-ordination and respiratory support/strength)
- Loudness control (respiratory support, phonation, articulatory effort)
- Phrase length/juncture (respiratory support, motor planning, aphasia)

Respiration

- Compensatory breathing strategies
- Efficient respiration (posture, rib cage mobility, decrease excessive tension)
- Prosthetic assistance (abdominal binder)
- Use phrasing
- Teach loudness (careful to not increase vocal fold hyperfunction) – Video clip

Phonation – Increasing adduction

- Increase respiratory support for improved valving, resistance, and exertion of vocal fold adduction
- Initiate phonation at beginning of exhalation
- Effort Closure Techniques (Push-pull exercises)
- Use phrasing to maximize short sustained effort
- Teach loudness
- Head turn or manual pressure to thyroid cartilage to increase tension on weak vocal fold

Phonation – Increasing adduction (medical Rx)

Medical treatments/prosthetics

- May require laryngoplasty (medialize paralyzed vocal fold)
- Portable Amplification or artificial larynx (electrolarynx)
- Teflon/Collagen injection to paralyzed cord
Phonation –Hyperfunction
- Increase respiratory support to decrease need for excessive valving at vocal cords
- Increase articulatory effort to create valving effect in mouth vs. vocal cords
- Pitch glides/humming to relax vocal tension
- Phrasing: focus on reducing strain for short periods in speech
- Oral reasonance: focusing vibration into articulators

Articulatory Precision
- Increase loudness: (flaccid, mixed, hypokinetic) – increases tension/strength of articulation – Video Clip
- Efficient respiration (posture, rib cage mobility, decrease excessive tension)
- Use phrasing to reduce complexity of motor task
- Exaggerated Articulation
- Slow Rate
- Strength training – controversial
- Relaxation & Stretching Exercises – also controversial (may help with spasticity/rigidity)

Articulatory Precision – Therapy Techniques
- Integral Stimulation – watch and listen imitation tasks
- Phonetic Placement – physical prompting; picture cueing; verbal prompting, etc.
- Phonetic Derivation – Using intact speech gesture (e.g., blowing) to facilitate targeted phoneme (e.g., /u/ vowel).
- Compensatory articulation movements
- Minimal contrasts (e.g., shoe vs. chew)
- Intelligibility Drills

Velopharyngeal Function
3 functions of velopharyngeal closure
- Resonance (vibration of vowels in mouth)
- Airflow management (direct airflow to oral cavity for all consonants except /m/, /n/, “ng”)
- Swallowing (direct liquid into hypopharynx and exert pressure on bolus)

Velopharyngeal Function
- Timing Coordination issues cannot be “fixed” – need to compensate by reducing rate of speech
- Hypofunction (flaccid type) – work on increasing effort of speech (loudness and phrasing), improving oral opening/oral resonance OR medical management
- Spastic type – tongue may be retracted/bunched and reducing oral resonance

Velopharyngeal Function
- No evidence for blowing exercises transferring to speech v.p. function
- Swallowing and speech velopharyngeal function have different neuromotor pathways
- Work on v.p. function for speech with SPEECH exercises
Prosody
• Involves changes in pitch, loudness, juncture (respiratory control), and linguistic proficiency.
• Voice books contain “emotional” passes or stimuli with multiple meanings.
• Contrastive Stress Exercises – Video Clips
• Use phrasing to maximize motor control & time for linguistic processing
• Practice pitch glides/loudness variation in combination with reading/spoken passages.

Environmental Modifiers
• Reduce background noise
• Optimize lighting & view of pt’s face
• Optimize seating and postural support
• Vocal rest before talking (especially with hypokinetic dysarthria or neurodegenerative etiology for dysarthria)

Linguistic Strategies
• Use telegraphic speech if necessary (eliminating unnecessary words)
• Spell words out loud
• Use alphabet board to cue first letter of word pt is saying
• State topic first

Prosthetic Devices/Tools
• Palatal lift
• Pacing board / metronome
• Voice amplifier
• Vocal Intensity Monitoring Device
• Augmentative Communication Device / Communication Board

Prosthetic Devices/Tools
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Prosthetic Devices/Tools

- Palatal lift
- Pacing board / metronome
- Voice amplifier
- Vocal Intensity Monitoring Device
- Augmentative Communication Device / Communication Board

Augmentative Communication

- IPAD
- Traditional AAC device
- Sign language
- Written language
- Voice output switch
- Picture/Alphabet Communication Boards
- TTY Relay system / text messaging

Neurogenic Speech Disorders

- Dysarthria
  - Includes all processes of speech (respiration, phonation, resonance, articulation, prosody)
- Apraxia
  - Articulation and prosody are primarily affected (could affect timing of velopharyngeal closure)

Causes of Acquired Apraxia

Lesion/injury to:
- left inferior parietal lobule
- the frontal lobes (especially the premotor cortex, supplementary motor area, and convexity)
- corpus callosum (rare)

Some Types of Apraxia

- Limb
- Oral
- Verbal

Symptoms of Apraxia

- Struggle behaviors (groping/scanning)
- Automatic/reactive speech less impaired
- Frequent metathesis errors
- Syllable collapses
- Awareness of errors
### Acoustic and Physiologic Findings with AOS
- Variability and abnormal distribution of VOT with voiced/voiceless consonants
- Slow rate
- Less variability in intensity; less stress on final word in sentences; uniform stress/syllable durations
- Incomplete vocal tract closure for stops
- Perseverative formant trajectories – Video Clip

### Comorbidies
Often occurs with:
- Aphasia (especially expressive/nonfluent aphasias)
- Oral Apraxia
- Right Hemisphere Dysfunction
- Can co-occur with dysarthria

### Comparison of Apraxia & Expressive Aphasia

**Similarities**
- Apraxic errors can sound similar to paraphasias
- Prosodic errors (esp. right hemisphere dysfunction)
- Difficulty repeating accurately
- Groping (due to anomic w/ aphasia)
- Slow speech rate/poor intonation with Broca’s

**Differences**
- Paraphasias often “fluent”
- Perseveration with aphasia
- Grammatical errors with aphasia (telegraphic)
- Word finding issues with aphasia
- Lack of awareness with paraphasias
- Often receptive language deficits

### Treatment Strategies
- Target core functional vocabulary with simple syllable structure
- Hierarchical approach to syllable structure/phonemic complexity
- Practice to automaticity
- Rate control
- “Silent” rehearsal of phonetically complex words
- Self and other monitoring
- Speech prosody (same as with dysarthria)
- Augment communication
- Use written language cues

### Primary References

### Additional References
Additional References


Questions?

Janelle Stevens, M.A., CCC-SLP

Childhood Apraxia of Speech: Diagnostic Indicators and Treatment Strategies

Additional References


Definition of Childhood Apraxia of Speech

- Childhood apraxia of speech is a neurological childhood speech sound disorder in which the precision and consistency of movements underlying speech are impaired in the absence of neuromuscular deficits. CAS may occur as a result of known neurological impairment, in association with complex neurobehavioral disorders of known and unknown origin, or as an idiopathic neurogenic speech sound disorder. The core impairment in planning and/or programming spatiotemporal parameters of movement sequences results in errors in speech sound production and prosody. (ASHA, 2007)

Definition of CAS

- Neurological disorder
- Impairment in planning and programming speech movement sequences
- Intelligibility of speech and prosody are impacted
- Difficulty with positioning, timing, and sequencing articulatory gestures
### Diagnostic Features

- Inconsistent errors on consonants and vowels in repeated productions of syllables or words
- Lengthened and disrupted coarticulatory transitions between sounds and syllables
- Inappropriate prosody, especially in the realization of lexical or phrasal stress

### Assessment Process

- ASHA, 2007:
  "A well-trained speech-language pathologist with specific experience in pediatric speech sound disorders, including motor speech disorders, is the appropriate professional to assess and diagnose CAS."

### Components of Comprehensive Examination

- History (family, medical, early vocal behaviors)
- Soft Neurological Signs (hyper/hypo-sensitivity, general motor planning)
- Oral Examination (structure/function of oral mech., imitate speech/nonspeech oral motor movements)

### Components of Comprehensive Eval (cont)

- Speech Analysis
  1. Diadochokinetic rate/coordination
  2. Consonant repertoire
  3. Vowel repertoire
  4. Substitutions/omissions/distortions/additions
  5. Word shape inventory (CV, CVC, CVCV)
  6. Word shape errors
  7. Inconsistency and variability
  8. Speech fluency

### Components of Comprehensive Eval (cont)

- Stress and intonation (syllable and sentence)
- Stimulability
- Other modes of communication
- Language (receptive/expressive, pragmatics)
- Pre-literacy (phonological awareness)

### Formal CAS Assessments

- Kaufman Speech Praxis Test for Children (KSPT; Kaufman, 1995)
  1. Designed "to assist in the diagnosis and treatment of developmental apraxia...of speech"
  2. Normed for children 2 – 6 years of age
  3. Imitation of oral movements, simple and complex phoneme production and word shapes
  4. Assesses overall speech intelligibility
**Formal CAS Assessments (cont)**

- **Verbal Motor Production Assessment for Children (VMPAC, Hayden & Square, 1999)**
  1. Appropriate for children 3 – 12 years of age
  2. Assesses global motor control, speech and nonspeech oral motor control, sequential control of speech and nonspeech movement sequences, and precision and control of articulators
  3. Describes overall speech characteristics (prosody, resonance)

**Formal CAS Assessments (cont)**

- **The Apraxia Profile (Hickman, 1997)**
  1. Designed to “identify and describe the apraxic characteristics present in a child with speech intelligibility deficits”
  2. Normed for children 3 – 13 years of age
  3. Assesses automatic and volitional oral movements, imitation of increasingly complex words and sentences, and connected speech
  4. Provides a checklist of CAS characteristics

**Paradigm for Treatment of CAS**

- **Phoneme Sequencing**
- **Repetitive Practice**
- **Intensity of Treatment**
- **Selection of Target Utterances**
- **Multisensory Cues and Feedback** (P.R.I.S.M, Fish, 2011)

**Phoneme Sequencing**

- The term “word shape” refers to the complexity with which syllables and words are constructed.
- Introduce new word shapes from simple to complex in progressive order
- Start the treatment at the next level of challenge

**Phoneme Sequencing (cont)**

- V: “ooh, ahh, oh”
- C: “mmm, ssss”
- CV: “me, hi, two, no”
- VC: “up, in, eat”
- V.CV: “icky, icy”
- Reduplicated CV.CV: “mama, dada, boo-boo”
- Consonant harmonized CV.CV: “mommy, daddy, puppy”
- Nonharmonized CV.CV: “many, happy, potty”
- Harmonized CVC: “pop, mom, dad”
**Phoneme Sequencing (cont)**

- Nonharmonized CVC: "hot, bus, book"
- CV.CVC: "banana, potato, tomato"
- CV.CVC: "donut, hopping, magic"

- Teach new word shapes using target words containing phonemes already in child’s repertoire
- Teach new phonemes using target words containing word shapes already in a child’s repertoire

**Repetitive Practice**

- You are teaching motor memory to allow child to move from volitional control (conscious awareness and focused effort) to automatic control (movement without conscious effort or focused attention)
- Without repetition, muscle memory cannot be established, which is necessary for automaticity

**Repetitive Practice (cont)**

- Initially, teach a new word shape in block practice, then move to random practice
- Activities should be fun and motivating
- Provide opportunities for several repetitions of target word shape

**Intensity of Services**

- Motor learning research suggests that practice schedules incorporating shorter but more frequent sessions lead to better learning of motor skills than few but longer practice sessions.

**Intensity of Services (cont)**

- Variables to consider:
  1. Severity of the child’s speech praxis
  2. Age of the child
  3. Attention capacity of child
  4. Physical stamina of child
  5. Types of goals being addressed
  6. Coexisting needs (motor, cognition, social, medical)
- Group therapy may be appropriate

**Selecting Target Utterances**

- Factors to Consider When Selecting Target Vocabulary:
  1. Speech Factors
  2. Language Factors
  3. Environmental Factors
  4. Motivational Factors
  5. Social Factors
**Speech Factors**
- Choose words that contain phonemes within the child’s repertoire when introducing a new word shape.
- Choose word shapes within the child’s repertoire when helping the child acquire new phonemes.

**Language Factors**
- Choose a variety of vocabulary words (nouns, verbs, adjectives, social greetings).
- Incorporate grammatical morphemes (“-ing”, plural “s”, location words, copular/auxiliary “is/am/are”).
- Be sure that vocabulary matches the child’s cognitive/chronological age.

**Environmental Factors**
- Home: ask family for words that are important to the child’s everyday experiences in the home (siblings, toys, activities).
- School: children need to be socially interactive with peers; choose curriculum words for older students.

**Motivational/Social Factors**
- Ask parents and teachers what motivates the child.
- Ability to attain and retain information is increased when experiencing positive emotions.
- Choose target vocabulary which promotes a variety of communication functions (pragmatics).

**Multisensory Cueing/Feedback**
- Visual cues (what child sees).
- Auditory cues (what child hears).
- Tactile/kinesthetic/propioreceptive cues (what child feels).
- Cognitive cues (what child thinks about).

**Visual Cues**
- Hand signals.
- Watching in the mirror.
- Written words/letters.
- Ask the child to “look at me and say.”
Auditory Cues

• “Watch and listen to me”
• Fade the visual cue of child looking at your mouth, can child imitate your speech model without the benefit of watching your mouth

Tactile Cues

• Sense of touch on the skin
• Tactile input is important for production of consonants
• Lips, tongue, alveolar ridge all have skin to receive tactile input
• You will need to touch and move the child’s articulators

Kinesthetic/Proprioceptive Cues

• Kinesthetic is body’s internal awareness sense of movement
• Proprioception helps person recognize amount of effort/force and speed of movement; how body parts are moving in relation to others in space
• SLOW DOWN YOUR RATE OF SPEECH

Cognitive Cues

• Provide verbal instruction to help the child think about speech movement
• “I like the way you closed your lips”
• “Oops, you need to put your tongue behind your teeth”
• “Pop the air out when you close your lips”

Cueing to Chart Progress

• Judge progress in therapy based on the amount of cueing necessary for correct production
• Production in unison, direct imitation, delayed imitation, spontaneous

Feedback

• Provide frequent feedback
• Provide immediate feedback
• Provide specific feedback (what was correct, not correct, what should be done differently)
• Limit the amount of information in your feedback expression
Other Issues to Address in Treatment

- Vowels need to be addressed early in the treatment process
- Dramatically impacts speech intelligibility
- "ee, uh, oh, ah, uh" are good for first vowels
- Teach vowels in CV and VC word shapes

Other Issues (cont)

- Prosody errors are one of the 3 core characteristics of CAS
- CAS children often use excessive/equal stress in words and syllables
- Prosody needs to be addressed early in the therapy process
- Be sure to model appropriate stress

Other Issues (cont)

- Lexical stress: stress of a syllable in a 2 or more syllable word
- Contrastive stress: stress of a word in a sentence
- The stressed syllable or word will have increased vocal intensity, longer duration, and higher pitch

Other Issues (cont)

- Use visuals to provide cue for correct stress
- Differentiate declaratives from questions
- Practice words that are the same except for syllable stress ("record")
- Use different tones of voice; pretend to be different characters

Words of Wisdom

- "I never teach my pupils; I only attempt to provide the conditions in which they can learn"

Albert Einstein
References


Questions?

Dysphagia Exams

Claudia A Magers, M.S., CCC-SLP
Linda Ernst, M.S., CCC-SLP

Learning Objectives

- Identify three factors in determining appropriate timing for referral of an instrumental swallow evaluation.

- Compare and contrast advantages and disadvantages of videofluoroscopic swallow study vs. fiberoptic endoscopic evaluation of swallow (FEES).

Dysphagia Exams

Dysphagia

Definition: disorder of swallowing
– May occur at any point during passage of bolus through oral, pharyngeal & esophageal structures
Dysphagia

Symptoms:
- Any difficulty with swallowing that interferes with safe & comfortable completion of bolus intake & swallowing
- Any difficulty that interferes with adequate oral nutrition intake
- Difficulty controlling own secretions

Dysphagia

- Swallowing = complex series of events
- For purposes of diagnosis & treatment, swallowing is divided into 4 phases:
  - Oral Preparatory Phase
    - Receive bolus into mouth
    - Bolus formation & control
    - Controlled movement of bolus in mouth
    - Readiness for swallow initiation
  - Oral Transit Phase
    - Tongue movement of bolus from mouth to throat
    - Swallow reflex initiated
  - Pharyngeal Transit Phase
    - Velopharyngeal port seal
    - Laryngeal rise & closure
    - Relaxation UES
    - Bolus entrance into esophagus
    - Wave/stripping of pharyngeal muscles to clear pharynx
    - Closure of UES
    - Oral / Pharyngeal structures return to rest positions
  - Esophageal Transit Phase
    - Bolus entrance through UES
    - Peristaltic action propels bolus toward stomach & returns to tonic state

Dysphagia Assessment
**Dysphagia Assessment**

- Clinical Feeding / Swallowing assessment
  - Aka: clinical bedside exam
- Instrumental assessments
  - OPM (Oral-Pharyngeal Motility) - Aka:
    - MBS (Modified Barium Swallow Study)
    - VFSS (Video Fluoroscopic Swallow Study)
  - FEES (Flexible Fiberoptic Evaluation of Swallowing)

**Swallow: Clinical Assessment**

What is it?
- Feeding Evaluation
- Bedside Swallow
- Clinical Swallow Evaluation

**Swallow: Clinical Assessment**

What is it?
Feeding: provides children / caregivers with communication and social experiences that form the basis for many future interactions

Swallowing: process of deglutition that occurs after liquids or foods enter the mouth

**Swallow: Clinical Assessment**

Indications – when to refer:
- High risk conditions
- Coughing/choking/sputtering
- Poor weight gain/excessive weight loss
- Drooling, excessive for age
- Vomiting
- Feeding refusal

**Swallow: Clinical Assessment**

Goals:
- Identify nature & extent of dysphagia
- Baseline: mealtime behaviors
- Introduce therapeutic modification
- Formulate hypothesis
- Determine need for timing & type of instrumental evaluation
- Recommend specialty referrals

**Swallow: Clinical Assessment**

HOW?
Multidisciplinary team provides the best method of establishing a diagnosis & providing treatment

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<th>Other</th>
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<td>Special Care</td>
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<td>Caregivers</td>
</tr>
</tbody>
</table>
Swallow: Clinical Assessment

Components of Exam
1. History
2. Physical Examination
3. Observation of feeding
   1. Reactions of child/caregiver
   2. Responses to non-nutritive stimulation
   3. Behaviors during feeding
Determine: Is it safe, adequate, & appropriate?

Gathering History

• Past Medical History
• Medications
• Allergies
• Therapeutic / Educational history

History & Physical Exam Considerations

Dysphagia vs. Normal Swallow?
Consider:
- Sporadic aspiration can be normal
- Chronic symptoms
- Occurs in greater amounts
- Occurs with wider variety of “materials” (liquids, saliva, foods, GER, etc.)

Physical Examination

Anything that might prevent / interfere with safe feeding/swallowing?

Observe:
- Play
- Communication
- Movement
- Fine motor skills
- Coordination
- Postural support

Physical Examination

Anything that might prevent/interfere with safe feeding / swallowing?

• Oral Mechanism Evaluation
• Vocal quality & resonance
• Speech: Signs of neurological / neurocognitive status:
  - Dysarthria
  - Apraxia
**Observations of Feeding**

Clinical Examination
- Sensory preferences
- Behaviors
- Posture
- Positioning
- Caregiver Behaviors
- Environment of Feeding / Routines

**Conduct Diagnostic Therapy**

Clinical Examination
- ID, Trial, Train modifications, if needed
- Possible attempted changes in:
  - Techniques
  - Posture / Position
  - Caregiver Behaviors/Environment
  - Diet / Consistencies / Textures

**Instrumental Assessment: Determine Need / Timing**

What questions will be answered by instrumental assessment that cannot be answered by clinical assessment?
- e.g., patient seems to be doing well with weaning of thickener, but high risk & history of silent aspiration

Clinical assessment indicates that other strategies are not sufficient to improve safety and may need to alter viscosity of liquids

Need to determine if aspiration of secretions is posing imminent health risk (FEES may be beneficial)

Need to determine if aspiration is present as part of differential diagnosis:
- Patient with no previous instrumental study or in whom skills have changed.
Instrumental Assessment: Determine Need / Timing

Clinical suspicion for regression of skills
  • especially if patient is on thickeners, which may contribute to risk as swallow weakens

Contraindications for Instrumental Assessment

• Family would be unwilling to comply with use of thickener due to QOL issues
• Medical team indicates patient is not appropriate for use of thickener & does not yet have cognitive ability to participate in maneuvers

Contraindications for Instrumental Assessment

• No change in skills since last study
• No clinical question / goal of study
  – e.g., insurance companies requesting annual studies or arbitrary time frame
• Clinician wants to establish safety prior to any oral intake in child who is not high risk

Contraindications for Instrumental Assessment

• Patient unwilling to take barium / food by mouth
  – in fluoroscopy suite
  – when a nasal endoscope is placed
  • unless needing to assess secretion management via FEES
• Patient is not at baseline respiratory status

Contraindications for Instrumental Assessment

• Patient - allergy to Barium or thickening agent
  – if on ketogenic diet may / may not be appropriate
• Patient - learning new developmental feeding skill which may cause temporary decline in airway protection
  – transition to cup drinking
  – chewing of dissolvable solids (especially if this is only clinical concern).

Instrumental Assessment

OPM / MBSS / VFSS

FEES
Susan Langmore, Ph.D., CCC-SLP
(Boston University Medical Center)
Advances in Pediatric Speech-Language Pathology: Challenging Disorders

Pros and Cons of VFSS (OPM)

Advantages
- All phases of swallow
- Defines abnormalities in process
- Estimate of Risk
- Assessment of protective responses/reactions
- Uses standardized consistencies for good test comparisons

Disadvantages
- One sample / limited time (does not simulate meal)
- Not a pass/fail
- Radiation exposure
- Must ingest sufficient amounts of BARIUM
- Does not assess complete esophageal phase
- “Consistencies” may not be representative of mealtime liquids or foods

Practice Guidelines for VFSS (OPM)

Positioning
- Assess “normal” and optimal feeding position
- AP view for unilateral issues
  - Velopharyngeal closure
  - Pharyngeal contraction

Repeating VFSS
- Not an arbitrary time frame
- Long-term effects of ionizing radiation unknown
- Need to state a specific reason
  - Assess effect of intervention to determine readiness to make diet change
  - Prior study lacked specific information for areas of concern
  - Progressive neurologic condition

Ionizing Radiation in Children
- Accumulative over time
- Unknown effects of radiation
- ALARA
  - “as low as reasonably possible”
**Instrumental Assessment**

*OPM / MBSS / VFSS*

**FEES**

Susan Langmore, Ph.D., CCC-SLP
(Boston University Medical Center)

**Pediatric FEES**

Fiberoptic
Endoscopic
Evaluation of
Swallowing

Adaptation of Susan Langmore’s FEES procedure (first developed at CCHMC, 1993)

**Adverse Effects**

- No significant (>4,000 peds)
- Nosebleeds
- Vasovagal
- Laryngospasm

**Pediatric FEES**

Assesses
- Anatomy for swallowing
- Movement/sensation
- Secretion Management
- Airway Protection during swallow
- Response to therapeutic interventions

**Contraindications for FEES**

- Nasal obstruction
- Choanal atresia
- Retrognathia
- Pharyngeal stenosis
- Medically fragile

**Advantages of FEES**

Advantages
- Detect Signs of Reflux
- Portability
- Feasible if difficult to position
- No radiation/time limits
- Better assessment of anatomy in 3 dimensions

**Advantages of FEES**

- Initial or interval exam
- Help determine readiness for oral feeds
- Info for surgery - airway reconstruction candidates
- Biofeedback
- Can perform in neonate & during breastfeeding
- No time/radiation limitations
Disadvantages of FEES

- Can have mild discomfort / invasive
- May gag / vomit
- "White out" during swallow
- Loss of view - sequential swallows (bottle)
- Limited to pharyngeal phase of swallow
- Requires special training

FEES Candidates

- Laryngeal abnormality
- Non-oral feeder with negligible intake
- ? Secretion management
- Readiness for oral intake introduction
- Evaluate effects of fatigue or specific maneuvers / sensory or positioning interventions
- More information needed after abnormal VFSS results
- Surgical patients (risk for aspiration post-op)
- Difficult to position for VFSS
- Need for interval exams to avoid radiation

VFSS vs. FEES

Adjunct — Not Replacement Exams

VFSS
- Oral, pharyngeal, cervical esophageal phases
- Lateral/indirect viewing of structures
- Positioning in lateral or AP; must remain still
- Must be mobile (go to radiology) sit in chair in limited space

FEES
- Pharyngeal phase of swallow (some judgments about transit)
- View structural anomaly (3D view including focal folds)
- Patient can move more naturally while eating
- Portable and can accommodate larger patients or take to inpatient floors

Interpretation/Comparisons

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<thead>
<tr>
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<tr>
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<td>Good</td>
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<tr>
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<td>Excellent</td>
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GERD

- Increased swelling
- Erythema posterior glottis
- Infrafollitic true vocal cord edema
- Decreased sensation?
- Eosinophilic esophagitis eval

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**Laryngomalacia**

- Inspiratory stridor
  - Worse when upset or sleeping / relaxed
- Low snoring sound
- Feeding difficulties
- Apnea/obstructive breathing

**Evidence Based Practice**

- Push to standardize pediatric videofluoroscopic swallow study
- Need to standardize terminology
- Consider all instrumental choices
- VFSS is NOT a pass / fail test
- Evidence in our field – Jeri Logemann’s Protocol 201 (more than 700 subjects)
- Some evidence / speculation about dangers of thickener

**Protocol 201 – Part 2**

- Randomly assigned to intervention
  - Followed 3 months for pneumonia
  - More than 2X increase in pneumonia incidence in NECTAR vs. NECTAR intervention
- Dementia with or without PD had significantly higher incidence of pneumonia than subjects who aspirated on none of the interventions
- Subjects who aspirated on all 3 interventions had a significantly higher incidence of pneumonia than subjects who aspirated on none of the interventions

**Best Practices for Feeding and Swallowing Therapy**

- Evidence base in motor sciences supports the notion that better outcomes result from interventions that involve practice of functional tasks as they occur in the natural environment (Sheppard, 2011)

**Compensatory Strategies**

- Chin tuck (not for infants)
- Head turn
- Head Tilt
- Effortful Swallow
- Tongue Strengthening Exercises
- Modified Supraglottic Sequence
- Sensory Enhancement
- Oral motor facilitation techniques
- Adaptive Equipment
- Altering Rate of Intake
- Thickening Liquids

**Cochrane review (2005)**

- Restriction of water – no evidence to document pulmonary effects of allowing or restricting water in pediatric pts known to aspirate

**Frazier Rehab Institute Water Protocol (1984)**

- Water between meals by policy, an pt NPO or on a dysphagic diet may have water
Questions?

Introduction
- Years at CMH &C: 29
- Years w/CPCF Team: 26
- Years w/ CMHC FFVN Team: 14
- Years Member ACPA: 20

Intent of Presentation
- Provide basic therapy principles for individuals with cleft lip &/or palate (CLP) &/or velopharyngeal inadequacy (VPI/A)
- Provide referral information for this population

Introduction cont’d.
- Primary Job Function: diagnostics/speech therapy for CLP & VPI/A
- Other Job Functions: diagnostics/speech therapy for pediatric communication disorders including VCD; mentor/cross-train new employees/students & give support to community SLPs in regard to CLP & VPI/A

Intent of Presentation cont’d.
- To emphasize the partnership between the community SLPs who provide treatment & the Cleft Palate/Craniofacial (CPCF) Team SLPs who provide diagnostics, recommendations & referrals
Informal Surveys

• 1st Informal Survey

1st Informal Survey cont’d.

2nd Informal Survey

Formal Survey

Basic Terminology
**Cleft Lip**

- A cleft of the lip which may be:
  - complete or incomplete
  - unilateral or bilateral
  - extend to the nostril
  - extend to the alveolus

**Cleft Palate**

- A cleft of the palate which may be:
  - complete or incomplete
  - unilateral or bilateral

---

**Cleft Lip & Palate**

---

Children's Mercy Hospital
Cleft Palate cont’d.

- Submucous
  - overt: observe one or more of:
    - bifid uvula
    - zona pellucida
    - muscular diastasis
    - notch in posterior border of hard palate

Overt Submucous Cleft Palate

Cleft Palate cont’d.

- Submucous cont’d.
  - occult (hidden)

Occult Submucous Cleft Palate

Cleft Palate cont’d.

- Variations
- Incidence
- Other Clefts
- Classification Systems

ACPA

- American Cleft Palate-Craniofacial Association
- www.acap-cpf.org
Flexible Fiberoptic Video Nasopharyngoscopy (FFVN)

- Invasive procedure used to evaluate the structure & function of the velopharyngeal mechanism during speech.

Velopharyngeal Mechanism

- Velo: velum/soft palate
- Pharyngeal: lateral & posterior pharyngeal walls
- Pharynx: part of throat between esophagus & nasal cavity

Velopharyngeal Anatomy

- Pharynx: part of throat between esophagus & nasal cavity

Velopharyngeal Port

- Port or gateway formed by action of the pharynx & velum to control the flow of air and sound through the mouth & nasal passages

Velopharyngeal Valve

- Valve which closes & opens velopharyngeal port between nasopharynx & oropharynx
- Formed by velum & aided by posterior & lateral pharyngeal walls
- Nasopharynx: part of pharynx above soft palate & just behind nasal cavity
- Oropharynx: part of pharynx below soft palate at the level of the oral cavity
Velopharyngeal Anatomy

- Diagram of the pharynx showing anatomical structures.

Velopharyngeal Valve

- Diagram illustrating the velum and soft palate.

Velopharyngeal Closure

- Closing of nasal cavity from the oral cavity
- Accomplished by using velum, pharynx, and possibly adenoid tissue
- Directs airflow through mouth instead of the nose

Velopharyngeal Inadequacy (VPI/A)

- Generic term
- Refers to any abnormal velopharyngeal function
- Diagnosed perceptually (by listening)

Velopharyngeal Inadequacy cont’d.

- 3 basic subtypes:
  - velopharyngeal insufficiency (VPI/S)
  - velopharyngeal incompetency (VPI/C)
  - velopharyngeal mislearning

Subtypes cannot be distinguished perceptually. Subtypes are not mutually exclusive.
**Velopharyngeal Insufficiency (VPI/S)**

- Structural defect of the palate &/or pharyngeal area

**Velopharyngeal Incompetency (VPI/C)**

- Neurogenic impairment
- Movement disorder/motor planning
- Not structural

**Velopharyngeal Mislearning**

- Functional disorder
- Faulty learning of articulation patterns
- Sound (phone) specific nasal air emission (s)

**Relationship of VPI/A Types**

- Anatomical (Anatomy)
- Structural (VP Insufficiency)
- Movement (VP Incompetency)
- Phonetic (VP Mislearning)
- Physiology (FFVN)

**Relationship of VPI/A Types cont’d.**

- Significance of relationship:

  IF TYPES ARE NOT MUTUALLY EXCLUSIVE, TREATMENT WILL NEED TO TARGET ALL TYPES PRESENTED BY THE PATIENT

**Relationship of VPI/A Types cont’d.**

- Significance of relationship:

  diagnostic assessment needs to determine types of VPI/A the patient presents
diagnostic assessment should include perceptual evaluation & possibly instrumental/more invasive evaluation such as FFVN
Relationship of VPI/A Types cont’d.

• Instrumental diagnostic assessment with FFVN needs to be a VALID study

• Use or attempted use of high pressure consonants is REQUIRED for a VALID FFVN study

Relationship of VPI/A Types cont’d.

• If high pressure consonants are not being used/attempted, speech therapy should occur first.

• If compensatory articulations are being used, they should be eliminated first through speech therapy.

VPI/A Treatment Options

• 1. Surgery

• 2. Speech therapy

• 3. Prosthesis

• 4. Do nothing

Intent of Therapy

1. Change (reduce/eliminate) resonance errors.

2. Change (reduce/eliminate) articulation errors including compensatory articulation errors, weak pressure consonants, & nasal air emissions (NAE).

Intent of Therapy cont’d.

3. Establish oral placement & correct manner of production for sounds.

4. Increase use, or at least attempted usage, of high pressure consonants.

Intent of Therapy cont’d.

5. Change (reduce/eliminate) vocal misuse.

6. Other as needed-language, fluency, respiration.
Timing of Delivery of Therapy

- Prior to determining VP adequacy
- After surgical intervention
- After prosthetic intervention
- On-going, including trial therapy

Results of Assessment Guide Therapy

- THOROUGH assessment is CRUCIAL to successful therapy!
- Results serve as a guide to areas therapy needs to target

Results of Assessment Guide Therapy cont’d.

- In approaches to articulation disorder:
  - may need to use multiple approaches (eclectic) as errors in one child may have multiple causes:
    1. structural
    2. oral motor
    3. VPI/A
    4. phonological
    5. developmental

Results of Assessment Guide Therapy cont’d.

DON’T FALL INTO THE TRAP OF PIGEONHOLING ERRORS OF CHILDREN WITH CLEFT LIP &/OR PALATE (CLP)&/OR VELOPHARYNGEAL INADEQUACY (VPI/A) AS ALL DUE TO CLP/VPI/A INCLUDING THE ASSUMPTION THAT ALL ERRORS ARE DUE TO STRUCTURAL PROBLEMS!

Anatomy & Physiology Principles of Therapy

- Overall basis of therapy for VPI/A is based on speech anatomy & physiology.
- Application of the following principles & techniques should aid in acquiring high pressure sounds in order to make further diagnoses regarding contributing factors to the VPI/A.
Anatomy & Physiology Principles of Therapy cont’d.

- Basic Principles & Techniques:
  1. Air travels the path of least resistance.
  2. More open space within oral cavity aids in airflow.
  3. Increased volume gives respiratory support & will help velopharyngeal effort.

Personal Assessment / Therapy Approach

- Eclectic

- Use WHATEVER MEANS to gain as much information as possible in order to help these children as much as possible

Therapy Principles

- Establish A Firm Foundation for:
  - concepts
  - vocabulary

John Wesley Saying

- Do all the good you can
- By all the means you can
- In all the ways you can
- To all the people you can
- As long as ever you can
Therapy Concepts & Vocabulary

- “Speech Helpers”

“Speech Helpers” cont’d.

Speech Helpers:  
- Lips
- Tongue
- Teeth
- Nose
- Palate (or roof or top of mouth)
- Voice Box
- Air

Sound Examples:
- “p”
- “t”
- “f”
- “m”
- “k”
- “z”
- “l”

Speech Helpers:  Vocabulary Cards

“Speech Helpers” cont’d.

Tongue: may be helpful to teach
- parts of the tongue (blade, tip, sides)
- as well as tongue’s possible locations within oral cavity, both horizontal & vertical planes

Tongue

Vertical Planes of Tongue
“Speech Helpers” cont’d.
Point of learning:
- recognition of terms
- gain usage of terms

NOT MEMORIZATION OF TERMS

Therapy Concepts & Vocabulary cont’d.

- Sound Production Concepts:
  - “nose” vs. “mouth” vs. “throat” sounds
  - “popping” vs. “blowing” sounds
  - “noisy” vs. “quiet” sounds

Sound Production Concepts cont’d.
- Concepts need to be taught & firmly understood
- Can be taught by pairing “sound card” with picture that represents the concept

Sound Production Concepts cont’d.
- Once taught, terms should be used in therapy
- Only need to teach concepts pertinent to child’s errors

Sound Production Concepts cont’d.
“Nose” vs. “Mouth” vs. “Throat” Sounds:
- match “sound cards” to individual pictures of nose, mouth & throat
- work through all the consonant sounds pairing each “sound card” with the appropriate anatomy card
- use of finger on side of nose during “nose” sounds might be helpful
- point out there are “only 3 nose sounds”
Sound Production Concepts cont’d.

“Popping” vs. “Blowing” Sounds:
- use a picture of something that pops (i.e., bubbles) for “popping”
- use a picture of the action of blowing (i.e., blowing out candle on a cake; child blowing a pinwheel)
- pair all plosive sounds with “popping”
- pair all fricative sounds with “blowing”
- pair affricate sounds with “popping” & “blowing” (place in the middle)

Sound Production Concepts cont’d.

“Noisy” vs. “Quiet” Sounds:
- use a picture of a noise-making activity for “noisy” (ex. playing the drums)
- use a picture of a quiet activity for “quiet” (ex. baby sleeping)
- pair all voiced consonant “sound cards” with “noisy” picture
- pair all voiceless consonant “sound cards” with “quiet” picture

Sound Production Concepts cont’d.

“Noisy” vs. “Quiet” Sounds:
- have child place index finger horizontally across vocal cords to feel for the “wiggle” of “noisy” sounds (and the lack of “wiggle” during “quiet” sounds)
- if the child can’t produce voiced consonants, have them put their finger across the SLP’s laryngeal area
Progression of Therapy

- Establish vocabulary & concepts
- If necessary, begin work on vowels
- Begin work on consonants
- Progress through contextual levels
- Progress through sound positions in words

Progression of Therapy cont’d.

Work on Vowels:
- be aware of which portion of the tongue is used
- be aware of tongue height in oral cavity needed to produce individual vowels
- vowels produced “low & front” are easiest for reducing/eliminating hypernasality

Progression of Therapy cont’d.

Vowel Progression by Difficulty:
- Components of Production of Vowels:
  - portion of tongue used
  - height of tongue

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<th>Production</th>
<th>Vowel</th>
<th>Example</th>
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<tr>
<td>1</td>
<td>low, front</td>
<td>ae (a)</td>
<td>“bat”</td>
</tr>
<tr>
<td>2</td>
<td>low-mid, front</td>
<td>eh (e)</td>
<td>“bet”</td>
</tr>
<tr>
<td>3</td>
<td>mid, front</td>
<td>a (a)</td>
<td>“bake”</td>
</tr>
<tr>
<td>4</td>
<td>mid-high, front</td>
<td>ih (i)</td>
<td>“bit”</td>
</tr>
<tr>
<td>5</td>
<td>high, front</td>
<td>ee (e)</td>
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<table>
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<tr>
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<th>Example</th>
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<tr>
<td>6</td>
<td>low, back</td>
<td>ah (o)</td>
<td>“bought”</td>
</tr>
<tr>
<td>7</td>
<td>low-mid, back</td>
<td>ah (o)</td>
<td>“bog”</td>
</tr>
<tr>
<td>8</td>
<td>mid, middle</td>
<td>uh (u)</td>
<td>“but”</td>
</tr>
<tr>
<td>9</td>
<td>mid-high, back</td>
<td>o (o)</td>
<td>“boat”</td>
</tr>
<tr>
<td>10</td>
<td>mid-slightly higher, back</td>
<td>oo (oo)</td>
<td>“book”</td>
</tr>
<tr>
<td>11</td>
<td>high, back</td>
<td>u (u)</td>
<td>“boot”</td>
</tr>
</tbody>
</table>
Progression of Therapy cont’d.

Vowels that combine 2 vowel movements (i.e., diphthongs) are the hardest.

These include: “i” as in “bite”, “ow” as in “bounce”, & “oy” as in “boy”.

In the progression, these would come after #11.

Progression of Therapy cont’d.

Work on Consonants:
• easiest is usually “h” (may not need to work on)
• next work on plosives
• next work on fricatives
• next work on affricates
• add nasal consonants last

Progression of Therapy cont’d.

Consonant Sound Progression by Difficulty
1. throat “blowing” sound /h/ is easiest
2. “popping” (plosive) sounds next: /p, b, t, d, k, g/
3. “blowing” (fricative) sounds next: /f, v, s, z/, “sh”, “zh” as in “Beige”, voiceless “th” as in “THumb”, & voiced “th” as in “THis”
4. Sounds that “pop” & “blow” (affricates): “ch” & “j” as in “Jam”

Progression of Therapy cont’d.

Initially, work on words with only 1 “manner” of production (ex. “cup” vs. “cuff”)
• As progress is made, try words with more than one type of sound (ex. “cuff, chip”)
• EXCEPT FOR THE NASAL CONSONANTS (/m, n/ & “ng” as in “rNG”)
Progression of Therapy cont’d.

Sound Positions in Words:
- work on consonants in all positions in words:
  - initial, medial, & final

Progression of Therapy cont’d.

“Trial & error”/experimental therapy:
- experiment with vowel & consonant combinations to discover what is easiest
- experiment to see if consonant position makes a difference
- observe where breakdowns occur & sounds become nasal productions
- only change one parameter at a time

Other Therapeutic Principles

Visual Observation of Patient During Speech
- need to watch patient’s face
- need to observe for:
  - nasal grimace
  - incorrect, but novel placement
  - facial/neck tension

Other Therapeutic Principles, cont’d.

Transcription:
- always transcribe the whole word
- try to include any narrow transcriptions
- use side notes/asterisk etc. for novel productions
- be prepared to make numerous notes regarding one sound’s production

Other Narrow Transcriptions

- Nasal Air Emission / ̃ /
- Denasal / ̃ /
- Nasalized Resonance [\n]
- Unaspirated [\n]
- Unreleased [\n]
- Interdental [\n]
- Lateralized [\n]

Other Therapeutic Principles cont’d.

Nasal Grimace:
- noticeable movement of nose during speech
- movement may occur at nares, mid-nose, nasal bridge
- movement may be unilateral or bilateral
- movement occurs in attempt to achieve velopharyngeal closure
- movement is subconscious attempt to move oral sound back to oral cavity from nasal cavity
Other Therapeutic Principles cont’d.

- Incorrect, but novel placement
  - producing sound with misplacement of articulators

Facial/Neck Tension
- if observed, could indicate:
  - need to tighten in order to stabilize body to produce sounds
  - may be using excessive vocal cord movement/closure in attempt to gain VP closure
  - if persists, will most likely cause fatigue which will negatively impact speech

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Nasal Occlusion cont’d.

- Nasal Occlusion:
  - may need to use to establish oral airflow of vowels & consonants
  - may depend upon sound type (plosive etc.)
  - may depend upon contextual level

Nasal Occlusion cont’d.

- Nasal occlusion means closing of the nostrils
- Should always be done with a gloved hand for infection control
- SLP should always provide the occlusion in order to assure nostrils are truly occluded.

Nasal Occlusion cont’d.

- Acceptance of Glove:
  - child may want to wear glove at same time
  - may need to have child check to see if SLP’s glove is “soft” (tell them no “ouches”)
  - may need to gradually introduce the glove

Nasal Occlusion cont’d.

- Experiment with gradual release of occlusion to check if child can maintain oral airflow
- May be able to do several sounds rapidly with occlusion & then quickly produce more without occlusion
- REMEMBER: Just because a patient can’t maintain oral airflow without occlusion DOES NOT necessarily mean that VPI/A is due to a structural problem
**Overall Guiding Therapeutic Principles**

- Increase awareness of "nose" vs. "mouth" sounds including idea of oral airflow
- Make the oral cavity more open (wider mouth opening/low-forward tongue carriage)
- Increase volume
- Light articulatory contacts

**General Articulation Therapy Principles**

- Use of labels for target sounds
- Use of oral motor therapy techniques

**General Articulation Therapy Principles cont’d.**

- Use of Labels for Target Sounds:
  - need to change the label
  - need to interrupt mental association for current label

**General Articulation Therapy Principles cont’d.**

- Use of labels for target sounds cont’d.:
  - need to establish new mental "pathways" for target sound
  - need to use descriptive labels

**General Articulation Therapy Principles cont’d.**

- Use of Oral Motor Therapy Techniques:
  - controversial area
  - using to learn proper placement for sounds
  - using to learn proper tongue movements
  - using to "wake up" the articulators
General Articulation Therapy Principles cont'd.

- Use of Oral Motor Therapy Techniques cont’d.:
  - NOT used for strengthening velopharyngeal valve muscles & therefore, improving VP closure
  - NOT used for strengthening lip &/or tongue muscles

Disclaimers Regarding Therapy Techniques

- Oral Motor Therapy Disclaimer:
  ACPA Parameters of Care (Revised November 2009), p. 27:
  “…oral-motor therapy (are) not useful in treating velopharyngeal dysfunction”

Disclaimers Regarding Therapy Techniques cont’d.

- “Blowing/Horn Hierarchy Therapy” Disclaimer:
  ACPA Parameters of Care (Revised, November 2009) p. 27:
  “blowing exercises (and oral-motor therapy) are not useful in treating velopharyngeal dysfunction”

Compensatory Articulations

- LEARNED articulation errors
- Are mostly errors of PLACEMENT
- Are typical to those with “cleft palate speech”
- Develop as a means or strategy to overcome structural difficulties due to the cleft

Compensatory Articulations cont’d.

- Are used to attempt to obtain valving for high pressure consonants
- Become part of child’s phonology
- Can be very persistent

Compensatory Articulations cont’d.

- VP port stays open during compensatory articulation productions
- Open port affects presence/absence of nasal airflow for ALL sounds
Compensatory Articulations cont’d.

- Judith Trost-Cardamone, SLP
- Sally Peterson-Falzone, SLP
- Phonetic symbols

Types of Compensatory Articulations

- Glottal Stops
- Laryngeal Stops
- Pharyngeal Stops
- Mid-dorsum Palatal Stops

Types of Compensatory Articulations

- Laryngeal Fricatives
- Pharyngeal Fricatives
- Velar Fricatives
- Mid-dorsum Palatal Fricatives
- Posterior Nasal Fricatives

Types of Compensatory Articulations

- Laryngeal Affricates
- Pharyngeal Affricates
- Mid-dorsum Palatal Affricates
- Posterior Nasal Affricates

Types of Compensatory Articulations

- Atypical Backing of /l/
- Atypical Backing of /n/
- Atypical Backing of /r/
Types of Compensatory Articulations

- Novel or idiosyncratic misarticulations

Types of Compensatory Articulations

- Resources for Descriptions/Information:
  - The Clinician’s Guide to Treating Cleft Palate Speech by Peterson-Falzone, Trost-Cardamone, Kamell, & Hardin-Jones; Mosby 2006 (includes CD-ROM)

Glottal Stop /ʔ/ /ʔ/

- Most common error
- Normal sound in many languages
  - English: vowel initiation
- Voiced Stop consonant with glottal placement
- Laryngeal / Vocal cord valving
  - Adduct
  - Pressure build-up below glottis

GLOTTAL STOP /ʔ/ /ʔ/

- Greater pressure builds up
  - Consonant substitution > vowel initiation
- Excessive tension
  - Lower vocal tract
    - > intense opening / closing vocal cords
  - Ventricular vocal cords adduct / contact

Glottal Stop /ʔ/ /ʔ/

- Substituted: whole class of stops
- Frequently co-articulated
  - One manner of production
  - Two places of production
- Perceptually distinct from:
  - Pharyngeal stop / omission
**Mid-Dorsum Palatal Stop**

- Stop consonant made in approximate place of “y”
- Mid-section of tongue (dorsum) contacts mid-section of palate
- Typically substituted for /t/ or /k/ (voiceless) & /d/ or /g/ (voiced)
- Perceptually is a cross between /t-k/ or /d-g/
Observations Regarding Compensatory Articulations

- Are active errors
- Can & SHOULD BE changed in therapy!!!!

Observations Regarding Compensatory Articulations

- Need to eliminate/reduce as many as possible prior to instrumental assessment (ex. FFVN) in regard to VP structure & function for valid study
- Are “STUBBORN”; therefore, really need to apply the “new pathways” techniques/principles

Therapeutic Techniques for Compensatory Articulations

- Basic goals:
  - eliminate compensatory pattern(s)
  - establish correct oral placements
  - establish correct manner of production

Therapeutic Techniques for Compensatory Articulations cont’d.

- Establish correct oral placements:
  - get larynx open/glottis open & relaxed
  - get airflow up through relaxed larynx into
  - get tongue placement forward

Therapeutic Techniques for Compensatory Articulations cont’d.

- Previously mentioned, as well as these additional techniques, should be used for most compensatory articulations:
  - auditory/tactile discrimination
  - light articulatory contacts
Therapeutic Techniques for Compensatory Articulations cont’d.

- Phoneme Selection cont’d:
  - anterior place of production
  - highly visible
  - voiceless

Therapeutic Techniques for Compensatory Articulations cont’d.

- Target correction of a whole pattern of articulation errors

- Build repertoire of correctly produced words
Therapeutic Techniques for Compensatory Articulations cont’d.

• Glottal Stops:
  – whisper technique: produce sustained, long easy exhalations, first with only air & then with easy production of /a/; bridge consonant to the vowel with /h/
  – train to feel open, relaxed throat & how air feels as it passes through on both inhalation & exhalation; transfer to “easy onset” of vowels followed by light articulatory contact of /p/ while emphasizing lips (not glottis) interrupt airflow

• Glottal Stops cont’d.:
  – try moving from a fricative to a stop: /fffpp/ or /sssst/

Therapeutic Techniques for Compensatory Articulations cont’d.

• Mid-Dorsum Palatal Stops:
  – use visual cues for /t/ & /d/
  – use tactile cues for /k/ & /g/
  – use occluded “n” or “ng” if child has in repertoire

• Posterior Nasal Fricative:
  – use correctly produced fricative to teach good oral sound production & airflow, then transfer the airflow to the new oral sound target
  – use visual cues

Therapeutic Techniques for Compensatory Articulations cont’d.

• Posterior Nasal Fricative:
  – use tongue fronting
  – use /l/ or voiceless “th” to teach oral airflow

Other Treatment Information

• Treatment should be:
  – direct
  – Intensive
  – Frequent
  – preferably individual
Other Treatment Information cont’d.

- During each treatment session:
  - multiple correct productions of target sounds should be elicited (more than 50)
  - drill techniques are much more effective & important in this type of therapy

Other Treatment Information cont’d.

- Reinforcement techniques:
  - should be motivating
  - should be interesting/fun
  - should be simple
  - should be quick

Other Treatment Information cont’d.

- Reinforcement techniques cont’d.:
  - should not interfere with the flow & focus of treatment
  - a varied reinforcement schedule should be used

Other Treatment Information cont’d.

- Verbal reinforcement (in so far as correctness of sound productions) should be specific

Other Treatment Information cont’d.

- Homework:
  - should be given when child can be successful
  - should reinforce goals covered in therapy session
  - should be positive for both the parent & the child
Speech Treatment for Resonance Errors

• Includes the following:
  – Hypernasality
  – assimilative hypernasality
  – cul-de-sac resonance
  – mixed resonance
  – nasal air emissions
  – weak pressure consonants

Basic Perceptual Assessment

• Nasal patency
  – can mask severity
    or
  frequency
  of resonance issues

Speech Treatment for Resonance Errors cont’d.

• Resonance:
  – vibratory response of a body or air-filled cavity to
    frequency of sound
  – quality of voice resulting from sound vibrations in
    pharyngeal, oral &/or nasal areas
  – refers to both perceptual & physical aspects

Speech Treatment for Resonance Errors cont’d.

• Hypernasality:
  – excess nasal resonance on vowels & vocalic
    consonants (i.e., “ir” as in “bird”), glides (“w, y”) or
    liquids (“l, r”)
    – transcribed as: ~

Speech Treatment for Resonance Errors cont’d.

• Assimilative Hypernasality:
  – excess nasal resonance on vowels in presence of
    nasal consonants (“m, n, ng”)
  – transcribed as: ~

Speech Treatment for Resonance Errors cont’d.

• Cul-de-sac Resonance:
  – blind pouch/passage with only one outlet
  – resonance sounds as if in a cave
Speech Treatment for Resonance Errors cont’d.

• Cul-de-sac Resonance:
  – occurs due to obstruction
  – created by trapping resonance (or sound) in back of mouth
  – tongue placed back in mouth toward pharyngeal wall

Speech Treatment for Resonance Errors cont’d.

• Hyponasality:
  – reduction in nasal resonance
  – affects nasal consonants
  – is NOT opposite of hypernasality/can co-occur

Speech Treatment for Resonance Errors cont’d.

• Denasality:
  – nasal air flow is completely blocked
  – prevents nasal air flow for nasal consonants
  – /m/ sounds like /b/
  – /n/ sounds like /d/
  – “ng” (as in “ring”) sounds like /g/

Speech Treatment for Resonance Errors cont’d.

• Mixed Resonance:
  – combination of hypernasality, assimilative hypernasality, hyponasality, &/or cul-de-sac resonance
  – can have any combination
  – severity may vary between resonance types

Speech Treatment for Resonance Errors cont’d.

• Nasal air emissions (NAE):
  – audible or inaudible
  – nasal grimace
  – nasal turbulence/rustle

Speech Treatment for Resonance Errors cont’d.

• Audible Nasal Air Emissions:
  – oral consonants produced (emitted) through the nose
  – airstream is heard from the nose
  – transcribed as: ~
Speech Treatment for Resonance Errors cont’d.

- Inaudible Nasal Air Emissions:
  - oral consonants produced through the nose
  - not heard perceptually
  - detected by mirror exam

- Nasal Turbulence/Rustle:
  - oral consonant sound occurs during partially opened velopharyngeal valve
  - air flow is turbulent with noted noise/rustle

Speech Treatment for Resonance Errors cont’d.

- Weak Pressure Consonants:
  - sounds produced weakly
  - may be barely audible
  - occurs due to VPI/A

Effectiveness of Therapy

- Effective in regard to improving/correcting:
  - hypernasality, NAE, weak pressure consonants when characteristics are:
    1. mild
    2. inconsistent
    3. associated with oral motor dysfunction

Effectiveness of Therapy cont’d.

- Effective in regard to improving/correcting:
  - hypernasality, NAE, weak pressure consonants when characteristics are:
    4. occur primarily with fatigue
    5. child is stimulable
    6. after secondary palatal surgery to gain improved function of revised structure

Effectiveness of Therapy cont’d.

- Therapy may be less effective for improving/correcting hypernasality, NAE, weak pressure consonants when characteristics are:
  1. moderate or greater in severity
  2. more consistent in occurrence
Effectiveness of Therapy cont’d.

• Speech treatment after prosthetic intervention may be less effective than treatment following secondary palatal surgery.

Therapeutic Techniques for Hypernasality

• Most effective treatment is surgical intervention

• Speech treatment techniques change ORAL ACTIVITY not oral structure

Therapeutic Techniques for Hypernasality cont’d.

• Techniques to Encourage Oral Resonance:
  – concept of oral (mouth) vs. nasal (nose) airflow
  – visual discrimination (feedback) of hypernasal speech vs. normal speech
  – auditory discrimination of hypernasal speech vs. normal oral speech
  – produce oral/nasal contrast (lower/raise velum during production of “ah”) (negative practice)

Therapeutic Techniques for Hypernasality cont’d.

• Techniques to Encourage Oral Resonance cont’d.:
  – yawn followed by phonation
  – work from low front vowel (“ae” as in “hat”) to high front vowel (“ee” as in “heat”) to low back vowel (“ah” as in “hot”) to high back vowel (“oo” as in “hoot”)

Therapeutic Techniques for Hypernasality cont’d.

• Techniques to Encourage Oral Resonance cont’d.:
  – exaggerate articulatory movements
  – alter rate
  – alter pitch
  – overall, use loose, open relaxed articulatory contacts
Therapeutic Techniques for Hypernasality cont’d.

- Techniques that are NOT helpful to eliminate/reduce hypernasality:
  - palatal exercises
  - palatal massage
  - Blowing
  - Sucking
  - Icing
  - cheek puffing
  - other non-speech activities

Therapeutic Techniques for Assimilative Hypernasality

- Use similar techniques as for reducing/eliminating hypernasality

- Difference between is vowels are in nasal context in assimilative hypernasality

- Although surgical intervention is best, may be able to alter with therapeutic techniques

Therapeutic Techniques for Assimilative Hypernasality cont’d.

- Use vowel hierarchy

- Use consonant hierarchy in combination with nasal consonant (s)

- Use context hierarchy

Therapeutic Techniques for Cul-de-Sac Resonance

- Use similar techniques for reducing/eliminating hypernasality

- Use of open mouth, low forward tongue carriage will be VERY IMPORTANT

Therapeutic Techniques for Mixed Resonance

- As is a combination of any of the following: hypernasality, assimilative hypernasality, hyponasality, cul-de-sac resonance, will need to combine approaches previously discussed

- Approach combinations should be specific to types of resonance each patient exhibits

Therapeutic Techniques for Nasal Air Emissions (NAE)

- Techniques to Eliminate/Decrease NAE:
  - concept of oral (‘mouth’) vs. nasal (‘nose’) airflow
  - auditory discrimination
  - visual feedback
  - tactile feedback

Children's Mercy Hospital
Therapeutic Techniques for NAE cont’d.

- Techniques to Eliminate/Decrease NAE cont’d.:
  - occlude nostrils during sound production followed by immediate release of occlusion-tell child to maintain oral airflow
  - alter rate of speech
  - reduce air pressure behind targeted sound

Therapeutic Techniques for Weak Pressure Consonants

- Techniques to Eliminate/Decrease Weak Pressure Consonants:
  - use similar techniques as use to change hypernasality
  - remember the “leak” in the system that causes the consonants to be weak is the VPI/A
  - experiment with what happens when try to increase volume

“Take Aways”

- Results of assessment guide therapy
- Don’t assume all errors are due to a structural problem or even due to the cleft itself

Relationship of VPI/A Types

- Learning (articulation disorder)
- VP Mislearning
- Anatomy (structure)
- VP Insufficiency
- Physiology (movement)
- VP Incompetency
- VP Mislearning

“Take Aways”

- Just because the structure is repaired, it doesn’t mean the brain recognizes the repair & knows how to use the structure
"Take Aways"

- Therapy needs to be "eclectic"/ "trial & error"

- Error "pathways" are stubborn & hard to "undo" & replace with "new pathways"

Final Thoughts

- Partnership:
  - CMHC SLPs are in partnership with you the treating SLP
  - we all ultimately want the best outcome possible for these children

John Wesley Saying

- Do all the good you can
- By all the means you can
- In all the ways you can
- To all the people you can
- As long as ever you can

Contact Information

- Sally Helton
  Hearing & Speech
  913-696-5756 (direct line)
  shelton@cmh.edu

Initial contact: by phone

Authorization/Releases

Referral to Cleft Palate Team

- Suspect or confirmed CLP/VPI
  Contact: Helen Huff, RN, BSN, IBCLC
  Clinic Coordinator
  816-234-5829

"The Bottom Line"

- I view these children as jigsaw puzzles. They come with all the pieces and it is my job to figure out how they fit together.
“The Bottom Line”

- The “bottom line” is you are the experimenter in this science case involving questionable velopharyngeal inadequacy, articulation errors, possible compensatory articulations etc. You are trying to find out what does and doesn’t work for the patient/student. If you apply the principles that I’ve covered here, including the anatomy and physiology principles that you learned in your basic training as a speech/language pathologist, you should be able to successfully implement this type of therapy.

Closing

Good luck with your therapy for your patients/students with VPI!

Questions?
**Vocal Cord Dysfunction (VCD)**

Claudia A Magers, MS, CCC-SLP

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**Objectives**

- To understand the diagnosis of VCD
- To understand the differential diagnoses with VCD
- To know when to refer to Hearing & Speech for VCD evaluation and treatment
- To understand an overview of evaluation and treatment for VCD in Hearing & Speech

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**Vocal Cord Dysfunction (VCD): What is it?**

- Abnormal closing of vocal cords
- Normal breathing:
  - Vocal cords open (inhalation / exhalation)
- VCD:
  - Vocal cords are close together or actually close during breathing
  - Very small opening for air flow
  - Difficulty breathing - Increased breathing effort (work of breathing)

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**Vocal Cord Dysfunction (VCD): What is it?**

- Not Asthma
- Not Exercise Induced Asthma
- Symptoms do NOT improve with asthma medications
- May have combination: asthma + VCD
- Diagnosis: "exclusions"

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**Vocal Cord Dysfunction (VCD) Symptoms - Primary**

- Chronic cough (leading to shortness of breath) (30%)
- Shortness of breath (75%)
- Difficulty breathing
- Chest tightness / pain

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**Vocal Cord Dysfunction (VCD) Symptoms - Primary**

- Throat tightness (25%)/ Choking sensation
  - “Stuck”- can’t get it out; “Lump”
- “Difficulty getting air IN”
- Increased work of breathing
- Hoarseness / Loss of voice (aphonia)
- Wheezing (46%)
- Stridor (squeaky noise in throat) (43%)
Vocal Cord Dysfunction (VCD)

**Symptoms - Primary**

- Hyperventilation Symptoms
  - Feeling faint / lightheaded / dizzy
  - Tingling in extremities (arms / legs / fingers / toes)
  - Tingling around mouth
- Side pains
- Dysphagia (swallowing problems)

**Common Co-Mobidities**

- Upper respiratory infections
- Thick “phlegm” and / or post nasal drip
- Nasal congestion with / without PND
- Laryngopharyngeal Reflux (LPR)
- Gastroesophageal Reflux (GER)
- Airborne irritants / Chemical exposures
- Fumes / Odors

**Common Co-Mobidities**

- Upper respiratory infections
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**Inciting Factors (Triggers)**

- Upper respiratory infection
- Acute asthma attack
- Cough
- Trauma / Traumatic Life Event
- Endotracheal intubation
- Increased vocal demand
- Increased stress in life
- Inadequate liquid intake

**Patient Population**

- 80 – 90% = Females
- Adults: = large number = medical professionals
Patient Population

- Pediatrics:
  - Large number adolescents (~ 13 – 17 y/o)
  - High performing (athlete / scholar) – Type A
  - Large number = Asthma + VCD
  - Chronic cough
  - Depressed / anxious / traumatized

Pathway to Diagnosis

- Asthma? Treat with medications
  - Minimal benefit: Increase medications
  - No consistent help
- ED
  - Referral:
    - Asthma/Allergy Clinic
    - Ear, Nose Throat (ENT) Clinic
    - Pulmonology Clinic
    - Cardiology Clinic

Pathway to Diagnosis

- Normal chest x-rays
- Normal endoscopic findings (if scoped)
- Referral:
  - Cardiology Exercise Stress Test
    - Rule out obstructive lung component during exercise
    - Rule out cardiac etiology
  - PFTs – abnormal return flow loop

Pathway to Diagnosis: Clues

- Knowing patient population
- Knowing typical VCD symptoms
- Historical Clues:
  - Rapid onset and / or rapid resolution of symptoms
  - Primary: INSPIRATORY symptoms
  - Unusual or unidentified triggers for symptoms
  - "Asthma" difficult to control

VCD Diagnosis

- Confirmed
- Strongly suspected
- Refer to Hearing & Speech
  - Evaluation / Confirmation
  - Treatment
  - Referrals?
- Some refer for Psychosocial evaluation / treatment
**Expectations: SLP**

- Reinforce diagnosis of VCD
- Patient / Parent Education
  - Foundational: Understanding VCD
  - Foundational: Understanding body & breathing
  - Experiential: How to control body
  - Experiential: Relaxation
  - VCD controls
- Follow up with physician

**Psychosocial Aspects of VCD**

“Soul and body, I suggest, react sympathetically upon each other: a change in the shape of the soul produces a change in the shape of the body, and conversely: a change in the shape of the body produces a change in the state of the soul.”

**Psychosocial Aspects of VCD**

- Hypotheses / Research
  - VCD = abnormal control of breathing
  - Breathing = Brain + Lungs
  - VCD = in class of Panic Disorders
  - “Suffocation Alarm”
  - Hyperventilation
  - Fight or Flight arousal
  - ?? Alter VC movement?

**Psychosocial Aspects of VCD**

- Brain Respiratory Control
  - Respiratory rate & rhythm
  - Monitor: respiratory rate & rhythm
  - ?? Monitor: status of airway ??
  - Acts as “Suffocation Alarm”

**Psychosocial Aspects of VCD**

- Panic symptoms:
  - Palpitations, pounding heart, accelerated heart rate
  - Sweating
  - Trembling / shaking
  - Sensations of shortness of breath / smothering
  - Feelings of choking
  - Chest pain / discomfort
  - Nausea of abdominal distress
  - Feeling dizzy, unsteady, lightheaded, faint
  - Derealization / Depersonalization
  - Fear of losing control or going crazy
  - Fear of dying
  - Chills or hot flashes

**Psychosocial Aspects of VCD**

- Panic Disorder (DSM-IV)
  - Recurrent, persistent unexpected panic attacks
  - +/- 1 month concern for panic attacks
  - Worried about consequences of attacks
  - Behavioral change due to attacks
  - Often, avoidance behaviors
  - Discrete period of intense fear or discomfort (≥ 4 symptoms develop - **first 5 = primary)**

**Psychosocial Aspects of VCD**

- In-depth interview
  - Why here?
  - What are symptoms?
  - When first noticed symptoms?
  - Symptoms vary?
  - What causes variance?
  - How do symptoms make you feel?
  - What are you feeling in your body?
  - Where on body are symptoms experienced?
  - What triggers?
  - What controls tried?
  - Benefit?
  - How much water / liquid do you drink daily?
  - Personality / Behaviors
  - Etc.
SLP Treatment

- Confirmation Dx
- Affirm / Validate feelings & fears
- Assure: our treatment works!
- Education
  - Vocal tract
  - Respiration
  - Relaxation
  - VCD controls

SLP Treatment

- Relaxation vs tension:
  - Diaphragmatic breathing
  - Face
  - Throat / VC's
  - Shoulders
  - Chest
- VCD Controls:
  - Swallow-Breathe
  - Exercise
  - VCD controls vs.
    - Asthma
    - VCD controls vs.
      - Cough

SLP Treatment

- Questions? • Practice?

Thank You

Fluency Disorders in Children: Fluency Disorders in Children: Model for Evaluation and Treatment

Janelle Stevens, M.A., CCC-SLP

Assessment and Therapy is a Process

- Stuttering is nonlinear
- Stuttering is a dynamic process
- Need a multidimensional model to address the important characteristics of stuttering
CALMS Model

- Cognitive: Beliefs, understanding, knowledge about stuttering
- Affective: Feelings – fear, anger, anxiety
- Linguistic: Syntax, semantics, discourse
- Motor: Speech behaviors, “stuttering”
- Social: Handicap, avoidance, impact on education/job choices

Severity Will Change View

- Each level of model (CALMS) will be different depending upon severity of disorder
- Child could have mild motor component but severe social and affective component
- Child may have severe motor component but mild affective component

Assessment Process – Cognitive/Affective

- What the child knows about stuttering
- What the child feels about his/her talking/stuttering
- Is the child concerned about his/her talking, what level of concern
- How do others see the problem
- Does the child work to hide the stuttering

Assessment Process – Cognitive/Affective (cont)

- Ask open-ended questions (do you like talking, who do you like to talk to, do you know why you are here today)
- Use paper/pencil tasks from “The School-Age Child Who Stutters...” by Kristin Chmela and Nina Reardon
- I like “Hands Down” “Worry Ladder” and “What’s True for You?” worksheets

Assessment Process – Cognitive/Affective (cont)

- Ask the parent about their feelings/level of concern
- Get teacher’s input
- Stutter during the evaluation and watch the child’s response
- Ask if there are any avoidance/frustration about stuttering

Assessment Process – Motor/Linguistic

- You want to quantify and qualify the motor (stuttering) behaviors
- Obtain at least 3 speaking samples with a minimum of 200 syllables per sample
- Determine percentage of stuttered syllables
- Determine percentage of expression which is intended message
Assessment Process – Motor/Linguistic (cont)

- Obtain a language evaluation
- Look at form, frequency, and duration of stuttering moments
- Look for secondary struggles/responses
- Look at rate
- Look at parent’s rate of speech
- Parent demand on child’s language

Assessment Process – Motor/Linguistic (cont)

- Look at the contextualization effect on stuttering (language load)
- Get a sample of reading, narrative, and procedural discourse

Assessment Process - Social

- Social implications of stuttering
- Choices child makes that are influenced by stuttering
- Look at abilities of turn-taking and length of conversational turn
- Are there different behaviors in different settings/people

Assessment Process - Social

- How is the child communicating in social group interactions/family interactions

Assessments

- Stuttering Prediction Instrument for Young Children (Riley, 1981)
- 5 sections – history, reaction, part-word repetitions, prolongations, frequency
- Yields stanine, percentile, severity level
- Good for preschoolers, allows parent participation

Assessments (cont)

- Stuttering Severity Instrument – 4 (Riley, 2009)
- 3 sections – percentage of stuttered syllables, duration of stuttering, presence/absence of physical concomitants
- Yields percentile rank and severity
- Appropriate for preschool and school-age
Does Child Need Therapy?

- Yairi, et al, 1996 article lists risk factors for preschool children at-risk:
  - Age of onset after 3 years, 5 months
  - Disfluencies lasting 12 – 18 months
  - Family history of stuttering
  - Other communication impairments present
  - Male

Does Child Need Therapy? (cont)

- Types of stuttering include part-word repetitions, prolongations, blocks and cluster disfluencies
- For school-age children – how long has child been stuttering, does he/she meet the eligibility criteria for school services, is the stuttering educationally relevant, look at negative emotions/feelings/social issues

Treatment – Cognitive/Affective - Prescl

- Teach slow/fast, bumpy/smooth
- Teach/educate parents about stuttering
- Help parents find/modify environmental demands
- Increase family structure
- Desensitize child to fluency disruptors

Treatment – Cognitive/Affective – Scl Age

- Educate the child about stuttering
- Address any concerns/issues of teasing
- Work on self-esteem
- Reframe the child’s view of stuttering
- Demystify stuttering
- Use problem solving strategies

Treatment – Motor/Linguistic

- Teach fluency shaping (easy onset, light contact, rate reduction, continuous phonation, vowel prolongation)
- Teach stuttering modification (pull-outs, cancelations, voluntary stuttering)
- Gradually increase the length and complexity of utterances

Treatment – Motor/Linguistic

- Use narrative skills with storytelling
- Teach kids with severe disorder to reframe their expressions and use problem solving
- Mild disorder kids need fluency shaping
- Severe disorder kids need stuttering modification
- Reinforce fluent responses
Treatment – Motor/Linguistic

- Make talking fun and easy
- Emphasize communication competence (not stutter-free speech)

Treatment – Social - Preschool

- Teach parents to use turn-taking (verbal/nonverbal)
- Teach parents to reduce questions
- Teach parents to increase response time
- Teach parents to reduce on-demand speech
- Increase fluency across settings

Treatment – Social – School-age

- Improve turn-taking (verbal)
- Address teasing
- Improve listening skills
- Decrease avoidance
- Teach them to be their own advocate

Words of Wisdom

- “Stuttering is OK Because What I Say is Worth Repeating”
- From SFA products

References


Questions?