Information on Clefting

American Cleft Palate–Craniofacial Association
...It takes a team

http://kidswithcleftutah.blogspot.com

Myths

1. Don’t worry about speech or starting intervention until after surgery.
2. Babies cannot produce stops presurgery.
3. Don’t encourage vocalizations prior to surgery.
4. All babies with CP have feeding problems.
5. If VPI is present, a child cannot benefit from intervention.

(Golding-Kushner, 2001)

Myths

6. Oral motor exercises will strengthen the VP mechanism.
7. Children with CP have language delays.
8. Speech problems of children with CP do not have a phonological basis.
Common Facts about Clefting

- Most common birth defect (CDC, 2006)
- Who has a cleft?
  - Native American/India: 1:250
  - Utah: 1:500
  - Asian: 1:500
  - Caucasian: 1:750
  - African American: 1:900/3000
- CL & P more common in boys
- CP more common in girls

Cleft Palate Team Approach

- Pediatric Psychologist
- Geneticist
- ENT
- Pediatrician
- Prosthodontist
- Social Worker
- Speech-Language Pathologist
- Orthodontist
- Speech Surgeon

A Little About Anatomy
For Children with CP

- Muscles do not attach normally
- Musculus uvulae may be smaller/absent
- Tensor veli palatini inserted in bony portion of the cleft

Issues Related to Surgical Management

- Lip surgery
- Primary palatal repair
  - 1-stage surgery (hard and soft palate)
  - 2-stage surgery (veloplasty or delayed palate repair)
- Issues related to timing
- Secondary surgical management for speech

Management (Peterson-Falzone, Hardin-Jones, & Karnell, 2010)
Timing of Surgery: Key Issues

- Technical considerations
- Facial growth
- Development of velopharyngeal function
- Speech-language development

Palatal Repair: Timing

- 12 mths
- 8-9 yrs
- 6 mths
- 4 yrs

The Debate Continues:

- Facial Growth
- Speech Development
Timing: One Stage Repair

1980's
18-24 months

1990's
+12 months

2000's
6-12 months

(Wardill, 1937)

Younger than 1 year
Holdsworth (1945) 6-9 months

(Peterson-Falzone et al., 2010; Katz et al., 2009)

Timing: Delayed Hard Palate Repair

1980's
5.5 years

1990's
7.11 years

2000's
3.4 years

(Lohmander et al., 2012)

Rohrich et al. (2000)
suggested SPR at 3-6 mts and
HPR at 15-18 mts.
Secondary Surgical Management

- Secondary surgery to improve speech
  - 4 – 6 years of age
  - 3 types
    1) Technique to lengthen repaired palate
      - Furlow double-reversing Z-plasty
    2) Pharyngeal flap
    3) Sphincter pharyngoplasty

Secondary Surgery: Pharyngeal Flap
Impact of Clefting on Communication: Presurgery

- Mobility to impound intraoral air pressure
- "Avoids" pressure consonants
- No surface against which to place the tongue
- "Avoids" alveolar sounds
- Less practice with these sounds
- Delayed speech, Reduced intelligibility, CA1s

Secondary Surgery: Sphincter pharyngoplasty
Impact of Clefting on Communication: Presurgery

- Poor Eustachian tube functioning
- Conductive hearing loss
- Speech and language delays?

Impact of Clefting on Early Speech: What Does the Research Say?

Characteristics - Presurgery

- Vocalize as frequently
- Fewer canonical syllables/less complex
- Delayed in onset of canonical babbling
- Smaller consonant inventories

(Chapman et al., 2001; Scherer et al., 1999, 2008)
Characteristics - Presurgery

- Composition of babbling is different
  - Produce fewer stops, glides, velars
  - Prefer glottal place ([h] common)
  - Trends for more nasals but fewer alveolars and palatals

(Chapman, 1991; Chapman et al., 2001; Olson, 1965; Scherer et al., 2008)

Characteristics - Presurgery

- Comprehension within normal range
  (Long & Dalston, 1983; Scherer et al., 2008)
- Produced a similar number of nonverbal communicative attempts overall
  (Long & Dalston, 1982a, 1982b)

Why Do We Care About These Things?

Some might say:
Why Do We Care About These Things?

Others say:

1. Problems described above result in delays in babbling
2. Relationship between babbling and later speech/language

Relationship Between Early Speech and Later Speech and Language: NCP

- Ylvisaker (1986)
  - ↑ true consonants at 1 yr
  - ↑ sound development at 3 yrs
- Camp et al. (1987)
  - ↑ rate of vocalization at 4-6 mts
  - ↑ language at 1 yr
- Stoel-Gammon (1989)
- Whitehurst et al. (1991)
- Jesness et al. (1989)
  - < complex babbling in the first yr
  - ↓ rate of lexical development
  - ↓ language development at 6 yrs

Relationship Between Early Speech and Later Speech and Language: CP

- Greater stop production presurgery → better speech at 21 months
- Greater stop production postsurgery → better speech and lexical development at 21 months
- Larger true consonant inventory postsurgery → better speech and lexical development at 21 months

(Chapman et al. 2003)
Impact of Clefting on Communication: Postsurgery

What to Expect Postsurgery

- Takes about 6 weeks to see a normal amount of vocalization
- Stop consonants should start to emerge
- Comprehension should continue to be within normal limits
- Normal resonance

(Chapman, Hardin-Jones, & Scherer, 2013)

Speech Characteristics: Postsurgery

- Variability in speech development postsurgery
  - Many children with cleft palate have normal speech after palate repair
  - Approximately 68% need S/L intervention
  - 18-25% employ CAs
  - 25-37% additional surgery for speech
  - Group studies suggest delays in speech into adolescents and beyond

(Hardin-Jones & Jones, 2005)
Impact of Clefting on Speech: “Cleft” Speech Characteristics

- Cleft Palate Speech
  - Obligatory
  - Hypernasality
  - Nasal Emission
  - Dental Deviations
  - Fistula
  - Oral Distortions
  - Nasal Emission
  - Learned
  - Pronounced Speech Nasal Emission
  - Compensatory Articulations (CA)

Obligatory

- VPD
  - Hypernasality
  - Nasal Emission
  - Dental Deviations
  - Fistula
  - Oral Distortions
  - Nasal Emission

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Learned

- Phoneme specific nasal emission
- Compensatory articulations

Velopharyngeal Dysfunction

- Velopharyngeal Inadequacy (VPI)
- Velopharyngeal Dysfunction (VPD)

- VP Insufficiency
- VP Incompe'tence
- VP Mislearning

Speech Characteristics: Postsurgery

Resonance Disorders
1. Hypernasality - too much nasal resonance during production of vowels and voiced consonants
2. Hyponasality - too little nasal resonance during production of vowels and nasals
3. Mixed/Cul-de-sac resonance
Speech Characteristics: Postsurgery

Speech Disorders
1. Nasal emission – escape of air during production of pressure consonants
   - Audible
   - Inaudible
2. Weak pressure consonants – loss of air during production of pressure consonants
3. Nasal substitutions - nasal consonants are substituted for oral consonants
   - May be phonological or due to VPD

4. Compensatory productions
   - Place of articulation is moved posteriorly
   - Not sure why some children produce them
   - Attempts or meet pressure requirements for speech
   - Why are they such a problem??

5. Voice Disorders

6. Distorted sibilants

Compensatory Productions

- Why are CAs such a problem?
  - Sounds do not appear in most languages
  - Negatively impacts intelligibility
  - Difficult to eradicate in therapy
  - When child produces CAs cannot evaluate VP function
  - Rule governed—becomes part of child’s phonological system
Compensatory Articulations: Glottal Stop [ʔ]

- Substitution for stops, less frequently fricatives and affricates
- Can occur as a co-articulation
- Most common “compensatory” error

(Trost, 1981; Peterson-Falzone et al., 2006)

Compensatory Articulations: Pharyngeal Fricative/Stop/Affricate

- Linguapharyngeal articulation
  - Pharyngeal fricative: "h" 
  - Pharyngeal stop: "ç" 
  - Pharyngeal affricate: "j" 

(Trost, 1981; Peterson-Falzone et al., 2006)

Compensatory Articulations: Nasal Fricative [n̥] [ŋ] [ɲ]

- Produced as air passes through the nasal cavity at the same time that closure occurs at the bilabial, alveolar or velar place of production
- Co-artic with any pressure consonant

(Trost, 1981; Peterson-Falzone et al., 2006)
Compensatory articulations: Mid-dorsum Palatal Stop [c] & [j]

- Mid-dorsum part of tongue contacts mid-palate
- Place of articulation similar to /i/
- Can be related to a fistula

(Trott, 1981; Peterson-Falzone et al., 2006)

Backing

- Child moves the place of articulation farther back within the oral cavity
  - Alveolar stop ➔ velar stop
  - Alveolar fricative ➔ velar fricative

Impact of Clefting on Language: Postsurgery
Language Characteristics: Postsurgery

- Delayed onset and acquisition of words (Broen et al., 1998; Hardin-Jones & Chapman, in press; Scherer et al., 1999)
- Score lower (but within normal limits) on tests of language (see Chapman, 2009; Chapman et al., 2015; Klinto et al., 2014)
- Lower scores for MLU-M, but not grammatical accuracy (Chapman et al., 2015)
- Passive Communication style (Chapman et al., 1998; Frederickson et al., 2006)
- Relationship between speech delays and reading delays (Chapman, 2011)

Conversational Profiles (Fey, 1986)

- + Assertive + Responsive
- - Assertive + Responsive
- + Assertive - Responsive
- - Assertive - Responsive

Assessment Presurgery
Prelinguistic Assessment/Presurgery

- Case history
- Hearing assessment
- Sample of vocal behavior
- MacArthur-Bates Communicative Development Inventories (CDI)
- Standardized receptive and expressive language test

(Chapman, Hardin-Jones, & Scherer, 2013)

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<thead>
<tr>
<th>Name:</th>
<th>Date of lip surgery:</th>
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(Scherer, Chapman, & Hardin-Jones, 2005)

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Presurgery Redflags: Intervention Recommended

- Delays in comprehension
- Delays in expressive language
- Not vocalizing
- Not producing nasals, glides, glottals
- No canonical babbling by 9 – 10 months
Assessment Postsurgery

- Procedures vary depending on the age of the child
  - Single word stage
  - Early word combinations and beyond

(Scherer, Chapman, & Hardin-Jones, 2005)
Assessment Postsurgery

- Case history
- Oral mechanism exam
- Hearing evaluation
- Spontaneous speech/language sample
- Standardized test of speech sound production
- Standard set of sentences
- Counting

Oral Mechanism Examination

- Important to reconcile perceptual findings with evaluation of speech mechanism
- Cannot make judgments of VP function from an OME
- What can you see?
  - Lips
  - Tongue
  - Teeth—occlusion
  - Hard and soft palate
  - Tonsils
Assessment of Children with CP: Oral Mechanism Exam (OME)

- Face

Assessment of Children with CP: OME

- Repaired cleft lip
  - Length, symmetry
  - Open/closed at rest
  - Movement

Assessment of Children with CP: OME

- What to look for: Repaired cleft palate
  - Hard Palate
    - Palatal vault
    - Fistula
Assessment of Children with CP: OME

- What to look for: Repaired cleft palate
  - Dentition/occlusion
    - Missing, extra, or teeth in the wrong place
    - Alveolar cleft
    - Occlusal relationship: Upper incisors to lower incisors

Assessment of Children with CP: OME

- What to look for: Repaired cleft palate
  - Soft Palate
    - Length at rest
    - Fistula
    - Elevation on sustained /a/, “ha ha ha”
  - Oral Cavity
    - Tonsils (size)
  - Pharyngeal depth

Assessment of Children with CP: OME

- What to look for: Patient referred with VPD... no overt cleft
  - Everything mentioned previously
  - Bifid uvula
  - Blush line in midline of hard palate and/or transparent area
  - Notch in back of hard palate
Perceptual Assessment of Speech

- Cornerstone of assessment
  - Your EAR is the most important assessment tool ("GOLD STANDARD")
  - Sample
    - Conversational speech
    - Sentence repetition
    - Counting 1-20; 60-70
    - Single word production
    - Zoo passage

American English Sentence Sample
(Judith Trost-Cardamone, 2012)

1. Mom 'n Amy are home
2. Puppy will play a rope
3. Buy baby a bib
4. A fly fell off a leaf
5. I love every view
6. Thirty-two teeth
7. The other feather
8. Anna knew no one
9. Your bottle ate a hat
10. Do it today for Dad
11. Laura will yell
12. Sissy saw Sally race
13. She washed a dish
14. Zoey has roses
15. Watch a choo-choo
16. George saw Gigi
17. We are hanging on
18. A cookie or a cake
19. Give Aggie a hug
20. Hurry ahead Harry
21. I spy a starry sky
22. Ray will arrive early
23. We were away
24. We ran a long mile

American-English Word Sample
(Judith Trost-Cardamone, 2012)

pool       three       see       judge
puppy      XX         slay      veggie
pop        wreath     house     edge
bee         there      zoo       key
baby       father     scissors  cookie
bib         XX         eyes      rake
fire        tea        shoe      go
waffle      letter     washer    google
leaf        eat        wish      leg
V           dear       chew      wish
Over        ladder     catch
five        red        watch
**Low Tech Procedures** (Kummer, 2011; Peterson-Falzone, 2006)

- Mirror test (nasal emission)
- Feel side of the nose (hypernasality)
- Nares open – nares closed (hypernasality)
- Listening tube – (nasal emission)

**Analysis of Speech Findings**

**Assessment Postsurgery**

**Resonance**

- **Hypernasality**
  - Severity rating scales:
    - Normal, Mild, Moderate, Severe
- **Hyponasality**
  - Hyponasality:
    - _Absent_ _Present_

- **Hypernasality**
  - 1_______7
  - Normal __________ Severe

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Assessment Postsurgery

- Articulation/phonology
  - Nasal emission
    - Audible
    - Visible
  - Phoneme specific
  - Weak pressure
  - Compensatory articulations

- Acceptability
- Intelligibility
- Voice

Speech Acceptability

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<tr>
<th>Speech Acceptability</th>
<th>Rating</th>
<th>Description</th>
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<td>0</td>
<td>Speech is acceptable</td>
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<tr>
<td>1</td>
<td>Speech is mildly unacceptable</td>
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<tr>
<td>2</td>
<td>Speech is moderately unacceptable</td>
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</tr>
<tr>
<td>3</td>
<td>Speech is very unacceptable</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>Unable to rate</td>
<td></td>
</tr>
</tbody>
</table>

What Do We Need to Know from the Assessment?

- What?
  - Which errors are due to learning which are related to structural problems?
  - What is the next step?
    - Intervention
    - Referral to a cleft palate team for instrumental evaluation
    - No concerns
Results of Your Assessment

- Speech-language appropriate/VP mechanism normal
- Speech-language appropriate/VP mechanism questionable
- Speech-language delayed/VP mechanism normal
- Speech-language delayed/VP mechanism questionable

(Chapman, Hardin-Jones, & Scherer, 2013)

Important to Consider

- RE: Resonance/nasal emission
  - Cannot determine adequacy of the VP mechanism immediately after surgery
  - Assessment is ongoing
  - Must separate articulation from resonance

Important to Consider

1. Cannot blame everything on the cleft

2. Phonology impacted by clefting

(Chapman, Hardin-Jones, & Scherer, 2013)
Common Misconceptions

Nasal substitutions are indicators of VPI

Or related to phonological learning

Glottal stops present due to VPI

Or due to phonological learning

Implications

Difficult to evaluate mechanism with NS and GSs

Therapy to eliminate these before evaluation of VP function

(Chapman, Hardin-Jones, & Scherer, 2013)
Decisions?

- When to refer to Cleft Palate-Craniofacial Team?
- When to refer for intervention?

Things to Consider

1. Child's age/maturity
2. Speech skills
   - Severe speech problem?
   - Nasal substitutions?
   - Glottal stops?
3. Palatal fistula

Some Debate

- Intervention is a waste of time
- Eliminate all nonobligatory speech errors prior to surgery
  - Run the risk of recommending surgery for a child who does not really need it.
When VPI is suspected

- Others things to consider when making a referral:
  - Persistent glottal/pharyngeal articulations
  - Palatal fistula
  - Ability to cooperate
  - Sound inventory

What Improves with Surgery?

<table>
<thead>
<tr>
<th>Should Improve</th>
<th>Does Not Improve</th>
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<tbody>
<tr>
<td>Hypernasality</td>
<td>Compensatory articulations</td>
</tr>
<tr>
<td>Weak pressure consonants</td>
<td>Delayed speech</td>
</tr>
<tr>
<td>Nasal emission/turbulence*</td>
<td>Nasal substitutions</td>
</tr>
<tr>
<td></td>
<td>Oral distortion of fricatives/affricates</td>
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</table>

Intervention
Prelinguistic/Presurgery Treatment

- When is intervention appropriate?

Principles of Intervention

- Naturalistic approach
- Family centered
- Culturally/linguistically appropriate
- Guided by the toddler’s communication skills, not condition of clefting
- Evidence based

Prelinguistic Treatment

Goal 1

- Parent education
  - Review of developmental milestones
  - Impact of cleft on speech/language development and hearing
- Parents as intervention agents
  - Parent “training”
  - Monitor what parents are doing

(Chapman, Hardin-Jones, & Scherer, 2013)
Prelinguistic Treatment

Goal 2
- Increase frequency and diversity of vocalizations
  - Imitate baby’s vocalization
  - Model new sound combinations
    - Sounds/syllables with nasals, glides, liquids, etc. (e.g., wawa, mama, nana, lala).
    - Some babies produce stops—okay to model
    - Assume baby is attempting to communicate

(Chapman, Hardin-Jones, & Scherer, 2013)

Prelinguistic Treatment

Goal 3
- Increase communicative opportunities
  - Environmental arrangement
  - Communicative temptations
  - Be responsive

(Chapman, Hardin-Jones, & Scherer, 2013)

Parent Training Protocols

- Important part of parent education/training program
  - Avoid reinforcing growls/glottal stops
    - Ignore and model sounds produced within oral cavity
    - “hhhhhh” while opening and closing mouth
    - Occlude nares

(Chapman, Hardin-Jones, & Scherer, 2013)
Presurgery Treatment

- How to choose words presurgery
  - Low pressure
  - Front sounds
  - Avoid words that begin with vowels
- Stimulate sounds as you would with any baby
- Reinforce sound production

[Chapman, Hardin-Jones, & Scherer, 2013]

First Words

Presurgery
hi
me
more
mine
mommy
moo
no
nana (banana)
yeah

Intervention Postsurgery
Early Language Goals/Post Surgery

- Don’t wait too long!
  - Red flags
    - No evidence of oral stops 3 months post palatal surgery
    - Persistence of nasal/glottal substitutions
    - Lack of growth in phonetic inventory
    - Language delay

(Chapman, Hardin-Jones, & Scherer, 2013)

4 Profiles of Development

<table>
<thead>
<tr>
<th>Speech-language appropriate/VP mechanism normal</th>
<th>Speech-language delayed/VP mechanism normal</th>
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<tbody>
<tr>
<td>Speech-language delayed/VP mechanism questionable</td>
<td>Speech-language appropriate/VP mechanism questionable</td>
</tr>
</tbody>
</table>

(Chapman, Hardin-Jones, & Scherer, 2013)

Profile 1

- Monitor every 3 - 6 months

(Chapman, Hardin-Jones, & Scherer, 2013)

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Profile 2 & 3

- Do you work on speech, language or both?
  - At earliest ages cannot separate vocabulary from phonology/speech production
  - Older children
    - Are speech and language skills equally delayed?
    - Is speech delayed more than language or...?
    - Is speech "atypical"?

[Stoel-Gammon & Stone, 1991]

Comparison of Goals

<table>
<thead>
<tr>
<th>Profile 2</th>
<th>Profile 3</th>
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<tbody>
<tr>
<td>□ Expand vocabulary</td>
<td>□ Expand vocabulary</td>
</tr>
<tr>
<td>□ Expand consonant inventory</td>
<td>□ Expand consonant inventory</td>
</tr>
<tr>
<td>- nasals/glides → stops → fricatives</td>
<td>- focus on pressure consonants</td>
</tr>
<tr>
<td>- front sounds</td>
<td>□ Eliminate CAs</td>
</tr>
<tr>
<td>□ Eliminate CAs</td>
<td>□ Ignore NE &amp; hypernasality</td>
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<tr>
<td>(if present)</td>
<td>□ Awareness of oral air flow</td>
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[Chapman, Hardin-Jones, & Scherer, 2013]

Intervention Strategies

- Language intervention techniques/strategies
  - Similar to what you would do with noncleft youngsters with delayed language
  - Break the cycle
  - Focused stimulation
  - Enhanced Milieu Training with Phonological Emphasis (Scherer & Kaiser, 2010)
Enhanced Milieu Training with Phonological Emphasis

Environmental Arrangement

Responsive Interaction

Milieu Teaching Procedures

Selecting words

Selecting sounds

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(Shier & Kaiser, 2010)

Choosing Targets for Early Words

First 50 words

“In” sounds and “out” sounds

Words that serve many functions

How to select words/sounds?

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First Words

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<tr>
<th>Without Pressure Consonants</th>
<th>With Pressure Consonants</th>
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<td>hi</td>
<td>baby</td>
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<tr>
<td>me</td>
<td>book</td>
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<tr>
<td>more</td>
<td>bear</td>
</tr>
<tr>
<td>mine</td>
<td>ball</td>
</tr>
<tr>
<td>mommy</td>
<td>bye-bye</td>
</tr>
<tr>
<td>moo</td>
<td>daddy</td>
</tr>
<tr>
<td>no</td>
<td>doll</td>
</tr>
<tr>
<td>nana (banana)</td>
<td>cookie</td>
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Expand Consonant Inventory: Choosing Sounds

Consonant inventory

| ? | h |
| h |
| m | n |
| w | j |

Eliminating Glottal Stops

- Use /h/ to "break up" glottal pattern
  - Produce whispered /h/ + vowel
  - Prolong /h/ while producing /p/ or /t/
  - Overaspirate until production correct
  - Gradually introduce voicing

(Peterson-Falzone et al, 2006)
Intervention Considerations

- May want to avoid words with other nasals
- Choose a limited set of words
- Words should be functional
- Practice is important
- Begin at isolation
- Practice, practice, practice
- May be best to start with voiceless sounds if glottal stops are present

(Boyle & Chapman, 2014)

Profile 4

- Refer for objective assessment when hypernasality is present
- Speech therapy cannot change hypernasality
  - Child has oral sounds-pressure consonants
  - Child can cooperate for exam

(Chapman, Hardin-Jones, & Scherer, 2013)
Intervention Strategies

- Speech sound intervention
  - Traditional articulation approaches
  - Phonological approaches
    - Core Vocabulary (Dodd & Bradford, 2000)
    - Contrast approaches (Weiner, 1981; Gierut, 1989; Williams, 2000)
    - Cycles approach (Hodson & Paden, 1983)
  - Combination of the two

“Why traditional articulation therapy is preferred.” (Peterson-Falzone et al., 2006)

- Familiarize child with oral structures
  - May use hand-drawn pictures to show place of articulation for specific sounds

(Peterson-Falzone et al., 2006)
Intervention Strategies

- After determining sound(s) to work on
  - Teach correct placement for the sound
  - May need to “shape” the correct sound
  - Teach the orthographic symbol for the sound
  - Teach sound contrasts (start with place)
  - May need to re-name the sound
  - Discrimination of error and target
  - Don’t worry about hypernasality

(Peterson-Falzone, Trost-Cardamone, Karnell, & Hardin-Jones, 2006)

Intervention Strategies

- Discrimination training
- Phonetic placement techniques
- Place map for sounds
- Target selection
- Stabilize the sound
- Contrast training
- Self-monitoring

(Peterson-Falzone et al., 2006)

Contrast Treatments

- Minimal pairs—FCD—go vs. goat
- Maximal oppositions—vary along dimensions of voice, place, manner
  - [m] voiced, bilabial, sonorants vs. [k] voiceless, velar, obstruents
- Multiple oppositions—trains several sounds at the same time
Multiple Oppositions

Eliminating Glottal Stops
- Place map
- Auditory and visual discrimination
- Use /h/ to break up glottal pattern
  - Whispered h+vowel
- Sustain /h/ as lips close/open for voiceless labial/lingual stop
- Encourage overaspiration of voiceless stop until voiceless
  plosive-vowel syllables are correctly produced
- Gradually introduce voicing for voiced stop
- May need to begin with fricatives, VC, VCV
- Self monitoring

Eliminating Pharyngeal Fricatives
- Place map
- Discrimination
- \( \mathfrak{i} \) then S
  - VC with high front & mid-central vowels
  - Then CV, CVC
- Self monitoring
Eliminating Pharyngeal Stops

- Place map—moving forward
- Discrimination (pharyngeal muscle activity)
- VC—ik, ek, -> CV, monosyllabes, etc
- Maybe fricative first at same place
- Voicing not important
- Self monitoring

(Peterson-Falzone et al, 2006)

10/23/15

Treating Backed Oral Productions

- Consonants are backed but within oral cavity
- Identify and contrast place of production (visually and auditorily)
- Use sounds already produced at same place to elicit production

(Peterson-Falzone et al, 2006)

10/23/15

Nonspeech Oral Motor Treatment

- NO evidence to support the use of NSOMT for improving speech or VP function in children with cleft palate
  (or in any children for that matter!)

(Chapman, Hardin-Jones, & Scherer, 2013)

10/23/15
NSOMT

- Used in children with cleft palate
  - Why are they used?
  - Who uses them?
  - Do they work?

(Chapman, Hardin-Jones, & Scherer, 2013)
What is the Evidence?

- Systematic Reviews of RCT
- One RCT
- Well controlled study - No Randomization
- Well designed cohort/intervention comparison (more than one center)
- Multiple time series/Single Case Design
- Expert Opinion/Case Reports/Clinical Series/ Descriptive Studies/Studies with Poor Methodology

Adapted from Joanna Briggs Institute for EBP

Early Intervention Studies

- Vocabulary training administered by a clinician (Scherer, 1999) and mothers (Scherer et al., 2008) improved lexical and speech development

Intervention Studies

- Phoneme specific NE can be eliminated (Hall and Tomblin, 1975)
- Articulation can improve even with VPI (Oslen et al., 1969; Van Denmark, 1976; Van Denmark and Hardin, 1986; Pamplona et al., 2005)
- Short-term, intensive therapy better than shorter periods over a longer time (Albery and Enderby, 1984; Van Denmark and Hardin, 1986; Pamplona et al., 2005)
- Parent involvement resulted in better gains in intervention (Pamplona et al., 1996, 2000)
- Phonology intervention more effective than articulation therapy (Pamplona et al., 1999)

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Scherer (1999)
Scherer et al. (2008)
Hall & Tomblin, (1975)
Thompson et al. (2015)
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