



“FROM EVALUATION TO THERAPY: A
SCHOOL-BASED SLP’S GUIDE TO
TREATING THE UNINTELLIGIBLE
STUDENT”

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Learning Objectives

1. List three differentiating characteristics of articulation, phonological, dysarthria, and childhood apraxia of speech disorders
2. Describe how to incorporate three principles of motor learning into therapy sessions
3. List the key components of a therapy plan for an unintelligible student

A school SLP has a hard job. We must be expert generalists!
And then to have a student with a severe speech disorder
makes our job even harder.

Put your running shoes on and get ready to add to your
therapy intervention bag because we are going to cover lots
of information the next two hours.

I have a student that.....



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Example One

Student has a moderate-severe delay in expressive language and articulation skills. Very limited progress in speech therapy. Student has been observed to drool, grope during imitation tasks, inconsistent productions, and difficulty imitating oral motor movements.

History includes premature birth at 38 weeks but no other complications. Developmental milestones have been WNL except for communication. Student babbled very little as an infant. No history of feeding difficulties. History of at least three ear infections. Family history of speech problems.

Informal evaluation revealed the following:

- Produces “mama” and occasionally “maba” as “mama”
- Uses gestures including head nods, waving
- Drools with reminders to wipe his mouth
- Observations revealed persistent mouth opening and a limited ability to smile or elevate and lateralize his tongue

- Produces “u” for “up”, “I no no”, “fi” for fish, “bow” for blow, “mow” for more, “ta” for touch, “egg”, “ba nana” for banana, “mow fi” for more fish
- Imitations of words required models and were inconsistently correct, such as imitating “up” as “ub” and “pepper” as “puppy, bubl, efew, evew, nana”
- Exhibits difficulty jumping with both feet or tapping his foot with a model

Example Two

Transferred from out of state. Student had the diagnosis of a receptive and expressive language and phonological processing disorder and began receiving intervention for communication at 24 months of age. Birth history included a remarkable delivery with the umbilical cord wrapped around his neck and was unresponsive. Limited babbling as an infant.

At age 7, the *Goldman-Fristoe Test of Articulation-2* revealed a standard score of 51 with a percentile rank of 2. During the administration of this evaluation, the student:

- Groped with his tongue
- Produced voiceless phonemes for voiced as well as several phonemic distortions, substitutions, and deletions

- Demonstrated a monotone prosody
- Exhibited vowel errors
- Reduced ability to produce or imitate multi-syllable words
- Improved ability to imitate words when he imitated the word with the examiner

Speech Sound Disorders

Where do I start?



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Let's review articulation, phonological, dysarthria, and childhood apraxia of speech.

Articulation – It is defined as movements of the speech mechanism (e.g., tongue) to produce speech sounds.

Characteristics include:

- Focus on errors (e.g., distortions and substitutions) in the production of individual speech sounds (ASHA Practice Portal)
- Intact prosody
- Intact vowels

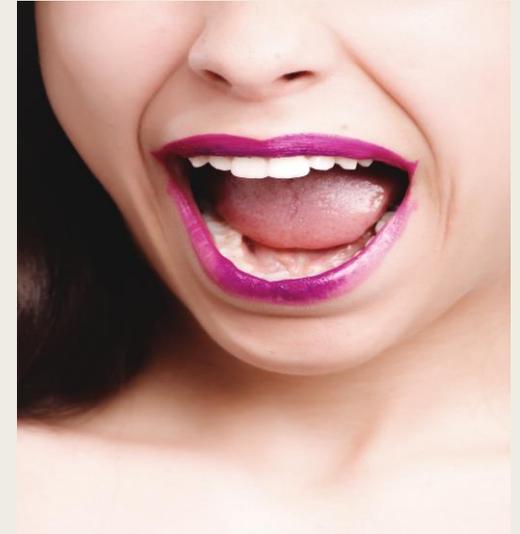


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Phonological - According to Barbara Hodson, most phonologists no longer use the term “phonological processes”. Many prefer to use “phonological approach” for remediation of highly unintelligible speech rather than the label “phonological disorder”. She also referred to it as the “Phonological PATTERN Remediation Approach.”

Phonological Characteristics include:

- Consistent patterns of error (“typical” patterns such as final consonant deletion, fronting, stopping, etc.)
- Intact prosody
- Intact vowels
- There may be a history of otitis media (Churchill, et.al 1988)

Barbara Hodson suggests using the Hodson Assessment of Phonological Patterns-3rd edition (HAPP-3) for assessment. It uses pattern-oriented analyses to identify three basic types of phonological patterns/deviations: (a) syllable structure omissions, (b) consonant category deficiencies, and (c) substitutions and other strategies (Hodson, 2006)

Dysarthria – According to the ASHA Practice Portal, dysarthria is a “neurologic motor condition that affects muscles involved in speech production.”

It involves respiration, phonation, articulation, resonance, and prosody.



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The ASHA Practice Portal states the characteristics of dysarthria include:

- Slow, labored, imprecise articulation, especially of consonants
- Fluctuating imprecision
- Sound prolongations
- Irregular pausing between words, syllables, and sounds
- Fluctuating imprecise articulation

Childhood Apraxia of Speech (CAS) – CAS is defined as “Neurological childhood speech sound disorder in which the precision and consistency of movements underlying speech are impaired in the absence of neuromuscular deficits.” (ASHA, 2007b)



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ASHA Technical Report (2007) also notes the possible markers of CAS as:

- 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

Strand (2017) noted the following possible characteristics:

- Difficulty moving from one articulatory configuration to another
- Groping and/or trial and error behavior
- Vowel distortions
- Prosodic errors
- Inconsistent voicing errors

Iuzzini-Seigel & Murray (2017) noted the following possible characteristics:

Vowel errors Consonant distortions

Stress errors Syllable segregation

Groping Intrusive schwa

Voicing errors Slowed rate

Increased difficulty with multisyllables

A child with CAS may have:

Restricted sound repertoire

Few/simple syllable shapes

Poor differentiation of vowels

Atypical error patterns (e.g., initial consonant deletion, sound preference, epenthesis, voicing errors, etc.)

There are multiple possible characteristics of CAS listed in the ASHA Practice Portal.

Please remember that no single characteristic is sufficient for a CAS diagnosis.

For the two examples, what are my recommendations?

Example One – Address this student's dysarthric and CAS characteristics

Dysarthric interventions address respiration, phonation, articulation, resonance and prosody. Please see the ASHA Practice Portal for specific treatment ideas. Please remember that there is limited research regarding dysarthria in children.

Example Two – Address this student’s phonological and CAS characteristics noting that CAS morphs as a child gains skill and can look like phonological but will still have motor planning challenges that need to be addressed – especially prosody

Phonological interventions can be found at ASHA’s Practice Portal. The focus is on emphasizing the sound patterns of language and emphasizing how changes in the sound pattern affect meaning. Targets are single sounds or sound patterns and co-articulation is not considered critical.

Therapy



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"From Evaluation to Therapy: A school-based SLP's guide to treating the unintelligible student"
presented by Leesa B. Anthony, M.S., CCC-SLP

Treat the features of CAS, not the diagnosis.

CAS interventions that are evidenced based and use the Principles
of Motor Learning:

Nuffield Dyspraxia Program,
Rapid Syllable Transitions
Dynamic Temporal & Tactile Cueing

The ASHA Practice Portal defines the Nuffield Dyspraxia Program, Rapid Syllable Transitions, and Dynamic Temporal & Tactile Cueing as:

Nuffield Dyspraxia Program(NDP3®) is a motor skills learning approach that emphasizes **motor programming skills** and **focuses on speech output**. It is described as a "bottom-up" approach in which the aim is to "build" accurate speech from core units of single speech sounds (phonemes) and simple syllables. New motor programs are established using cues and feedback and through frequent practice and repetitive sequencing exercises. Phonological skills are incorporated into the treatment approach through the use of minimal word pairs (Williams & Stephens, 2010).

“Rapid Syllable Transitions (ReST) is a method that involves repetition of varied sequences of real or nonsense syllables to train motor planning flexibility (Velleman, 2003; Velleman & Strand, 1994). It uses intensive practice in producing multisyllabic, phonotactically permissible **pseudo-words** to improve accuracy of speech sound production, rapid and fluent transitioning from one sound or syllable to the next, and control of syllable stress within words. Pseudo-words are used to allow the development and practice of new speech patterns without interference from existing error speech patterns Training is available at(McCabe et al., 2014; McCabe, Murray, Thomas, & Evans, 2017; Murray, McCabe, & Ballard, 2015; Thomas, McCabe, & Ballard, 2014; Thomas, McCabe, Ballard, & Lincoln, 2016).” [https://rest.sydney.edu.au/cases/step-](https://rest.sydney.edu.au/cases/step-by-step/)

[by-step/](https://rest.sydney.edu.au/cases/step-by-step/)

“Dynamic Temporal and Tactile Cueing (DTTC) is an integral stimulation ("look, listen, do what I do") method that uses a cueing hierarchy (auditory, visual, and tactile) and systematically decreases supports as the child achieves success at each level of the cueing hierarchy (Strand & Debertine, 2000; Strand et al., 2006). *Movement gestures* are shaped, beginning with direct imitation, moving to simultaneous production with tactile or gestural cues if direct imitation was unsuccessful, and then fading the simultaneous cue and again moving to direct imitation. *The key element of this approach is that the clinician is constantly adding or fading auditory, visual, and tactile cues as needed after each practice trial.* It is suggested for very young children with severe CAS.”



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Principles of Motor Learning (PML)

Frequency of practice

Consider shorter frequent sessions

Maximize the number of practice trials

Principles of Motor Learning (PML)

Organization of Practice

- Mass vs. Distributed

Mass – Practice one movement gesture or set of movement gestures many times (faster motor learning but less generalization of the movement)

Distributed – Practice a variety of movement gestures (slower motor learning, but better generalization of the movement)

Principles of Motor Learning (PML)

Organization of Practice

- Blocked vs. Random

Blocked – Practice target in a block of trials

Random – Practice target once or twice randomly

Principles of Motor Learning (PML)

Organization of Practice

- Variable

 - Change pitch and loudness

- Number of Targets

 - Less targets (3-5) to focus practice and increase repetitions for more severe children

 - More targets (6-10) to help generalize movements for less severe children

Principles of Motor Learning (PML)

Feedback

- Knowledge of Performance

Specific information about how the movement was performed using descriptive words

- Knowledge of Results

Correct or incorrect using words such as “not quite” or “right/wrong”

Ruth Stoeckel presented the following summary chart of PML (Stoeckel, 2019):

PML	Acquisition/Less Verbal	Retention/More Verbal
Practice Distribution	Mass	Distributed
Practice Variability	Consistent context, consistent prosody, pitch, rate	Varied context, varied prosody, pitch, rate
Practice Schedule	Blocked, predictable order	Random unpredictable order
Feedback Type	Knowledge of performance	Knowledge of results
Feedback Frequency	Often, immediate	Inconsistent, delayed
Rate	Slow	Normal, varied



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Let's talk about DTTC!

"From Evaluation to Therapy: A school-based SLP's guide to treating the unintelligible student"
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Why use DTTC? According to Drs. Stoeckel and Strand

- If you are suspicious of dysarthria – It can build automaticity for compensatory behaviors, such as increased respiratory support
- If you are suspicious of phonological – It can be used to target phonological error patterns
- If you are suspicious of a language delay – It can increase MLU with multisyllable sequences as targets

DTTC – Dynamic Temporal and Tactile Cueing

Ruth Stoeckel said it best: “It is a **framework for intervention** developed by Dr. Edythe Strand based upon integral stimulation (watch-say-do) and Rosenbek’s 8-step continuum.” (Stoeckel, 2019)

It emphasizes MOVEMENT, not sounds

As Dr. Stoeckel said in her presentation, “**DTTC** emphasizes the shaping of movement gestures and the practice of sequences of movement gestures in the context of speech.”

- Targets are movement sequences or gestures starting with the syllable level and moving higher (CV, VC, CVC, CVCV, etc.)
- Co-articulation is critical

- **DTTC** involves the **dynamic presentation of cues**
- **DTTC** manipulates **timing** in the presentation of **cues**
 - Simultaneously with the clinician (“Do it with me”; “Watch me”; “Look at me;” “Watch my face”)
 - In immediate imitation of the clinician
 - In delayed repetition
 - In conversational contexts

- **DTTC** incorporates **tactile/gestural cues** (touch, “mechanical” prompts, gestures)
- **DTTC** follows a **hierarchy of cues** (think of it as a “ladder” going up/down)
 - Slow, simultaneous, with tactile/gestural cues
 - Slow, simultaneous production
 - Simultaneous production
 - Direct imitation
 - Delayed imitation

Recommend watching Dr. Strand's six section videos on the Diagnosis and Management of Childhood Apraxia of Speech (CAS) using Dynamic Tactile and Temporal Cueing (DTTC) on You Tube:

<https://www.youtube.com/watch?v=T8nPckWfvG0>

How to “Do” DTTC – Follow the Hierarchy of Cues (Strand, 2020)

- Begin with direct imitation

If correct, then student imitates with varied rate and prosody

If student continues to imitate correctly, then provide delayed imitation

- Begin with direct imitation

If correct, then student imitates with varied rate and prosody

If incorrect, try miming or go back to simultaneous production

How to “Do” DTTC – Follow the Hierarchy of Cues (Strand, 2020)

- Begin with direct imitation

If student is incorrect, go to simultaneous production

If production is incorrect, then use a slowed rate of simultaneous production

If it is still incorrect, then add tactile and/or gestural cues to simultaneous production

How to “Do” DTTC – Follow the Hierarchy of Cues (Strand, 2020)

Fade cues as quickly as possible when you observe increased accuracy with less effort.

Always practice variability (change pitch and loudness) at each level (CV, VC, CVC, etc.)

DTTC Flow Chart

Direct Imitation



L. Moorer (2018)

Ruth Stoeckel (Stoeckel, 2019) summarized the **treatment steps** as follows:

- Sound/syllable inventory (spontaneous and elicited)

Choose about 5-10 targets from a list of 15-20 words that build upon the student's phonetic and phonemic inventory

- Interest inventory

Ruth Stoeckel (Stoeckel, 2019) summarized the **treatment steps** as follows:

- Identify functional vocabulary (Be conscious of vowels, sound patterns, and syllable shapes/sequences)
- Provide systematic instruction – Follow the DTTC hierarchy and the Principles of Motor Learning

Ruth Stoeckel (Stoeckel, 2019) summarized the **treatment steps** as follows:

- Maximize the student's response trials per session with quick reinforcers and maximize the student's ability to look at your face
- Elicit responses using activities, pictures, repetition

Ruth Stoeckel (Stoeckel, 2019) summarized the **treatment steps** as follows:

- Adjust the frequency and length of sessions as appropriate for the student and considering the rate of progress
- As the student makes progress, additional targets may be added

Focus on *Functional*

- The focus is to increase sound repertoire (new sounds in existing syllable shapes), increase syllable repertoire (use existing sounds in new syllable shapes and phrases as sequences), and improve prosody (accurate lexical stress and phrasal stress)

Focus on *Functional*

- The focus is to improve vocabulary (nouns, verbs, conceptual vocabulary), grammar/syntax (length and complexity of utterance), and social interaction (greeting, requesting/directing, commenting). Note: Typically developing children process spoken language more quickly when grammatically correct than when telegraphic (Fernald & Hurtado, 2006; Fey, Long & Finestack, 2003)

Evaluation



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Yes, we can diagnose CAS!

- The gold standard for CAS diagnosis is “expert clinical judgment” (ASHA, 2007)
- Do not use any single measure as the sole criterion for determining eligibility
- CAS is **NOT** a medical diagnosis. It is a **label** for a type of speech sound disorder

Evaluation should include:

- **Linguistic** (phonology and language)
- **Structural-Functional Examination** including structures (range of motion, coordination, strength, ability to vary muscular tension, and speed) and tissue characteristics
 - Remember that not much strength is needed to produce speech

Evaluation should include:

- **Nonverbal Oral Apraxia**

- Be on the lookout for difficulty with planning/programming movement for volitional nonspeech movements, such as blowing, coughing, pursing lips, lip smacking, kissing
- **Phonological Awareness – Locke Speech Perception Task**

Evaluation should include:

- **Articulation** - Include Vowels
 - Children with CAS have difficulties positioning and sequencing articulators for vowels (timing, nasality, voicing) (Gibbons, 2002)
 - Vowel errors contributed to long-term intelligibility problems in three children with CAS (Davis, 2003)

Evaluation should include:

Did you know /s/ contributes the most to intelligibility?
You may want to consider reviewing new research regarding Speech Sound Development such as Shriberg, 1993, and Lof, 2004

Evaluation should include:

- **Motor Speech Evaluation** (Repeat variety of words 10x each)
 - Examine the sequencing of movements across a variety of contexts and with various levels of cueing
 - Vowels
 - CV (Me, Day, Do), VC (Up, Eat, Ice), CVC (Mom, Pop, Sis) (Hop, Town, Cat) (DEMSS) (Strand & McCauley, 2019)

Evaluation should include:

- Reduplicated syllables (Papa, Deedee, Cuckoo), Bisyllabic (Baby, Daddy, Cookie) (Bunny, Today, Balloon), Multisyllabic (Banana, Video, Honeydew) (DEMSS) (Strand & McCauley, 2019)
- Phrases
- Sentences of increasing length

Dynamic Evaluation of Motor Speech Skill (DEMSS)
(Strand & McCauley, 2019) is available for purchase.

After the evaluation



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You need to *consider* the following:

- If student exhibits reduced speech intelligibility, you may want to consider requesting an Assistive Technology evaluation.

- Be prepared to explain the possible CAS characteristics to the parent. Apraxia Kids has prepared several different brochures that can be shared with the parent written in English and Spanish: <https://www.apraxia-kids.org/education/apraxia-kids-library/>

- Formulate **goals** to address the student's speech sound disorder.

The goal or the focus of treatment is to improve the student's ability to assemble, retrieve, and execute motor plans for speech.

The focus of treatment is the movement, not the sound.

- Goal examples include:

“During individual speech therapy sessions, the STUDENT will improve his ability to make accurate movement gestures for the production of CV and VC combinations in a number of co-articulatory contexts at 100% accuracy in direct imitation and at 80% accuracy in spontaneous production.”

“During individual speech therapy sessions, the STUDENT will improve the movement accuracy for V, CV, and CVC focusing on /o/ and /ou/ in a number of co-articulatory contexts at 100% accuracy in direct imitation and at 50% accuracy in elicited spontaneous production.”

Consider including a goal for prosody and phonological awareness

Children with early speech-language problems are at risk for literacy problems (as well as less optimal outcomes for academics in general) (e.g., Lewis et. Al. 2015) (Stoeckel, 2019)

- **Prosody** – As movement gestures become accurate, vary
 - Loudness
 - Rate
 - Pitch
 - Emotional expression

Prosody can be facilitated using literacy such as nursery rhymes, songs, rhythmic books (e.g., Pete the Cat). For the older student, write down multisyllabic words, such as **Te** le phone, emphasizing the “Te”.

- **Phonological awareness** activities or preliteracy tasks help students prepare to read. Children with CAS often have difficulty with phonological awareness. A few phonological awareness activities include:
 - Rhyming words - Have the student identify words that rhyme by pointing or saying it. The student can also create rhyming words if appropriate. Minimal pairs can be used for rhyming activities.

- Identifying sounds in words – The student identifies the first, middle and last sound in target words.
- Blending syllables – The SLP says two or more syllables separately and the student blends them together. (“hot” – “dog” for “hotdog” for “ba” – “na” – “na” for “banana”).

- Blending words – The SLP says the secret code (saying the sounds of a word separated (/m/ - /i/ - /t/) and child pus the sounds together for the word “meet”. Target words are chosen based upon the appropriate level for the student.
- Segmenting words – The SLP asks the student “What are all of the sounds in the word “cat?” Because the student will separate sounds, be careful that it isn’t practiced segmented.

- Associating grapheme/sound – “What sound does the letter ‘p’ make and what letter makes the /p/ sound?” (Velleman, 2002)
- Dr. Stoeckel suggested using Integrated Phonological Awareness intervention using the following free manual:
<https://www.canterbury.ac.nz/media/documents/education-and-health/gail-gillon---phonological-awareness-resources/programmes/preschool/01-Integrated-Phonological-Awareness-Manual-Sept-07.pdf>

- Since children with CAS have difficulties in phonological awareness tasks (e.g., rhyming, syllable segmentation), leads to difficulty with literacy tasks (e.g., spelling, word identification, and word attack) (Fish, 2016).

- According to Margaret Fish, McNeill et al. (2009) “examined the effects of an integrated phonological awareness program to address simultaneously speech production, phonemic awareness, and letter-sound knowledge...Phonological awareness tasks incorporated into treatment included activities to strengthen sound-letter associations, blending, segmenting, and phoneme manipulation.” McNeill et al (2009) found that children demonstrated gains in speech, phoneme awareness, and letter-sound knowledge (Fish, 2016).

- How should therapy be done to incorporate motor planning and phonological awareness? Choose words for the phonological activities that share characteristics of the chosen functional speech targets. For example, if the child was working on the syllable shapes of CVCV, then you can also work on blending and segmenting the individual sounds in the CVCV syllable shapes (Fish, 2016).

- Other suggestions from Fish include:
 - Draw the child's attention to the look and feel of the sound as you practice the motor movement.
 - Use written letters as cues when working on specific phonemes.
 - A specific letter or letters can be highlighted with a marker to bring attention to it. For example, target syllable shapes can be written larger than the other letters or in a different color than other letters. If the syllable shape includes a word, such as baseball, the syllable shapes of "base" and "ball" can be written with a space between them or written in different colors.

- Use blocks or other visual cues for syllable blending
- Create new words using phoneme replacement activities (e.g., hat, cat, bat, etc.)
- Sort the target words in various ways
- Use predictable or rhyming books
- Incorporate songs, finger plays, or nursery rhymes into treatment

- Why use visual cues (Fish, 2016)?
 - Specific sounds generally correspond with specific alphabetic letters.
 - Words that begin or end with the same sound are often written with the same letter.
 - Different letters may correspond to the same sound.
 - Longer words typically have more letters than shorter words.

- Words that rhyme often are written with the same ending letters.
- Syllables in multisyllabic words can be separated and counted.
- Sounds in words can be separated or segmented and then put back together or blended.

- Additional therapy suggestions for phonological awareness include the following (Velleman, 2002):
 - Visual Recognition of
 - Similarities and differences among words
 - Specific letters by sound
 - Specific common sight words

- Consider a variety of therapy times/schedule group vs. individual

There is support for the need for three to five individual sessions per week versus the traditional and less intensive one to two sessions per week (Strand & Skinder, 1999)

- **Be on the lookout for comorbidities** – AU, learning disabilities, etc.

- Approximately 60% of children on the autism spectrum have motor speech symptoms; about 13% report primarily symptoms of apraxia; 10% primarily dysarthria; remainder mixed (Marili, Andrianopoulos, Velleman & Foreman, 2004) (Stoeckel, 2019)
- Symptoms of childhood apraxia of speech are common among children with Down syndrome (Kumin & Adams 2000; Rupela & Manjula, in submission 2017) (Stoeckel, 2019)

- How do I get “buy in” from the parent, teacher, and aides to help with practice of mastered words?



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- According to Margaret Fish, we should
 - Reduce professional jargon
 - Coach parents in facilitation strategies
 - Provide opportunities for parents to observe and participate in treatment sessions
 - Provide regular updates regarding treatment progress
 - Provide home practice activities
 - Solicit input from parents regarding target utterance selection
 - Prepare parents for changes in treatment structure
(Fish, 2016)



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Admission, Review, and Dismissal (ARD) Committee Meeting or Individualized Education Plan (IEP) Meeting

Prepare and explain the PLAAFPs or Present Levels of Academic Achievement and Functional Performance – Describe the features of the speech sound disorder and do not rely on the diagnosis

- Introduction/Features Examples
 - “Student has some characteristics consistent with childhood apraxia of speech, including difficulty with consistency of productions and producing appropriate lexical stress.”

- State Functional Impact – Information about performance in academic and non-academic areas with regard to classroom standards
 - “Because of Student’s speech challenges, she is reluctant to share ideas during whole classroom discussions.”

- Describe Acquisition that includes therapy session performance and relevant elements of therapy approach
 - “Student is producing CV and CVC words accurately when making simultaneous productions with the clinician, but struggles with longer words, phrases, and sentences.”

- Describe Progress since last IEP
 - “Student can produce multisyllabic words consistently at the word-level in structured contexts but is not yet doing so consistently in the classroom setting.”

- Describe Needs
 - “Student needs to improve use of accurate lexical stress when producing multisyllabic words so that he can participate in classroom discussions.”

Example Three

Pre-Kindergarten student was referred through the Response to Intervention process to the Multi-Tiered Systems of Support Committee for unintelligible speech. Student's evaluation revealed a mild delay in expressive language and a moderate-severe delay in articulation.

Birth history includes an unremarkable birth and delivery. Developmental milestones have been WNL except for communication. History of one ear infection. There was no reported family history of speech problems.

At age 4, the *Goldman-Fristoe Test of Articulation-3* revealed a standard score of 46 with a percentile rank of <0.1. The following was observed during the administration of this evaluation:

- Phonological patterns of final consonant deletion, fronting, stopping, consonant cluster reduction, coalescence, and reduplication
- Vowel changes in words
- Limited imitations of oral motor movements
- Voicing errors
- Reduced ability to imitate multisyllabic words (i.e., produced “bedo, bideo, bebedo” for “video”)

What would you recommend and how would you start therapy?

Please pause the recording and think about it.

Take aways from this presentation:

- Consider using the Principles of Motor Learning for all of your students with speech sound disorders.
- We can diagnose CAS, but we must remember that CAS occurs in one to two children per 1,000.
- Prosody and co-articulation must be a part of all treatment sessions for speech sound disorders. Just listen to Eliza Doolittle on My Fair Lady!
- Students with speech sound disorders are at risk for delays in literacy acquisition. Be sure to add phonemic awareness activities to your therapy sessions.
- Don't focus on a label or diagnosis, focus on what needs to change to make a student a better communicator in the educational setting.

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