




4 Components of Therapy for Children with Childhood Apraxia of Speech (CAS)

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The Speech Therapy Solution



What is Childhood Apraxia of Speech (CAS)?

- Rare, neurologically-based speech disorder
- The child knows what he wants to say but the message gets mixed up in the motor-planning and execution phase so the sounds come out all wrong
- Car blinker example



3 Features of CAS

- No official definition or set of criteria yet
- 3 commonly-agreed upon features:
 - **Inconsistent errors** on consonants and vowels in repeated productions of syllables or words (meaning that if the child says the same word many times, it may sound differently each time)
 - **Lengthened and disrupted coarticulatory transitions** (meaning that the child's speech sounds choppy or disconnected due to trouble transitioning between sounds or between words in older children)
 - **Inappropriate prosody**, especially in the realization of lexical or phrasal stress between sounds and syllables (meaning that the rhythm, intonation, and stress of speech may sound off, the child may sound robotic, have incorrect phrasing, or stress the wrong words or syllables)



Other Characteristics of CAS (Less Commonly Agreed Upon)

- Reduced vowel inventory
- Vowel errors
- Increased errors in longer or more complex syllable and word shapes (especially omissions, particularly in word-initial position)
- Groping
- Unusual errors that “defy process analysis,”
- Persistent or frequent regression (e.g., loss of words or sounds that were previously mastered)
- Differences in performance of automatic (overlearned) versus volitional (spontaneous or elicited) activities, with volitional activities more affected
- Errors in the ordering of sounds (migration and metathesis), syllables, morphemes, or even words.



Therapy for Children with CAS

- Must consider and include these 4 components in your treatment (along with any other problems the child may be having):
 1. Speech Sound Production
 2. Language Development
 3. Augmentative-Alternative Communication (AAC)
 4. Prosody



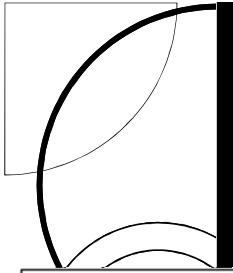
Including the 4 Components

- Think of each of those areas as a hierarchy of skills that the child needs to communicate
- Figure out where on the hierarchy the child is for each area and provide therapy that is appropriate to that need
- Include all 4 areas as possible or prioritize at first
- This method can be used for children with suspected CAS or those who aren't making progress with typical therapy



My Skill Hierarchies

- I have outlined skill hierarchies for each of the 4 components
- This is a basic framework to work from but some children will need to do the steps out of order and some will be working on multiple steps at the same time
- Start with this framework and modify as needed for each individual child



Component I: Speech Sound Production

Level	What it Looks Like	What to Work On
1. Imitating Actions	Child is unable to imitate speech sounds.	Build trust and motivation to imitate actions, start with whole body and move toward mouth
2. Functional Sounds, Sound Effects, Vocalizations	Child is able to imitate actions but unable to imitate or produce sound combinations	Increasing imitation and production of sound effects, functional sounds (like mmm for eating), and vocalizations. Pair sounds with actions and praise any attempts to make sound with the mouth. Provide temptations to make the sounds.
3. Sound Combinations (CV, VC)	Child is able to imitate or produce some sounds but is not yet spontaneously combining 2 sounds, like consonant-vowel or vowel-consonant	Target words that combine one vowel with one consonant. Use these words repeatedly in functional activities at first and then transition to being able to do drill work. Start with a few words and gradually increase number of sounds used and vary their placement (before or after vowel). Once child has several CV or VC words, use one as a carrier phrase and combine together (my ball)
4. Repeated Strings of CV or VC	Child is able to combine a vowel and consonant together but is not yet producing longer utterances	String together repeated CV or VC combos, like mama or mamama. Practice transitional movements of articulators. Once comfortable, add changes to the sequence, like ma ma ma mow or ma mow ma mow
5. Add a Structure, Add a Sound	Child is able to say some limited structures (like CV, VC, and CVCV) but struggles to say longer or more complex words	Teach the child to say a new sound in mastered structures or mastered sounds in new structures: CVC, CCVC, CVCC, CVCV, CVCVC, CCVCV, CVCCV, CCVCVC, CVCCVC, CVCVCC, CVCVCV, etc. Combine all mastered words together in carrier phrases and simple phrases/sentences
6. Sound Accuracy in Phrases and Sentences	Child is able to produce single words of many structures with speech sound accuracy but intelligibility decreases in phrases and sentences	Start with 2-word phrases and build up. Use the same word and build it up into a sentence (see...I see...I see cat...I see the cat)
7. Sound Accuracy in Connected Speech	Child is able to produce sounds correctly in simple sentences and phrases but intelligibility decreases in connected speech	Start with long sentences and automatic speech tasks, then move to open-ended questions, reading paragraphs, structured conversation, and unstructured conversation
8. High-Demands Context	Child is able to produce speech sounds correctly in connected speech unless it is in a high-demands situation, such as public speaking or unfamiliar multi-syllabic words	Teach strategies for compensating for remaining difficulties, such as receiving readings ahead of time, word attack strategies, etc.



Component 2: Spoken Language Skills

Level	What it Looks Like	What to Work On
1. Increasing Vocalizations	Child may use some gestures to communicate but is not consistently vocalizing with intent	Draw attention to mouth movements and sounds, encourage vocalizations while communicating with gestures or signs, teach parents on how to respond to and encourage vocalizations at home.
2. Functional Vocabulary	Child is able to vocalize with intent but is not yet saying real words (or at least not very many)	Start with just a few highly motivating words and teach the child to say his best approximation of that word in functional activities. Provide many opportunities to say the words repeatedly and cue with sign language signs or other cueing. Add more words as ready.
3. Functional Phrases and Carrier Phrases	Child is able to say a few words but is not yet combining words	Start putting together a few words at a time as soon as the child has some in his vocabulary. Spend some of your time teaching new single words and some of your time putting existing words together. Use carrier phrases like "I want..." or "I see...". Continue to use these phrases and words functionally throughout the child's day and provide many targeted practices of the words and phrases. Exact pronunciation is not the key, functional speech is the target.
4. Spontaneous Sentences	Child is able to say some functional phrases and specific carrier phrases (like "I want...") but is not yet saying novel, spontaneous sentences	Encourage child to put words together in new ways to form novel, spontaneous sentences. Start with targeted practice that will allow a child to practice a sentence structure repeatedly and move toward more varied productions.
5. Grammatical Markers and Linguistic Components	Child is able to speak a variety of different sentences spontaneously but is often missing grammatical markers or linguistic structures	Analyze which grammatical markers and linguistic structures are missing and systematically teach each one. Start with single words and gradually build up the sentence complexity in which the child is able to use the structure or component.
6. Using Complete Sentences in Connected Speech	Child is able to speak complete sentences in structured activities (where only one sentence is required at a time) but connected speech is still missing grammatical markers or linguistic components	Provide targeted practice to use one grammatical marker or linguistic component in connected speech. Target 1-2 structures at a time until mastery or rotate through in a cycles-like approach.




Component 3: AAC

Level	What it Looks Like	What to Work On
1. Gestures/Pointing	Child uses primarily reflexive communication (crying, facial expression, meltdowns) and does not use many gestures to intentionally communicate with others	Encourage the child to communicate intentionally with others using gestures, pointing, eye contact, joint attention, proximity, leading an adult by the hand, non-standard signs, acting out what one wants, etc.
2. Choosing an AAC System	Child is intentionally trying to communicate with others using gestures, pointing, and other non-standardized means of communication but does not have any formal use of language yet	Choose an AAC system that meets the needs of the child, the family, the educational environment, etc. All members of a child's family and educational team should be included in the decision-making process.
3. Training for AAC System	An AAC system has been chosen for the child but not everyone on the child's team knows how to use it	All family members, educators, therapists, and the child should be trained on how to use the system. If the system involves a device, this training should include basics of how to operate the device and how the child will use it. If sign language is used, all participants should be shown how to learn new signs.
4. Child Uses AAC System for Functional Needs	All team members know about the AAC system but the child is not yet using it to get his wants and needs met in the natural environment	Use of the AAC system is modeled by all communication partners. The child is encouraged to play with the system and is taught how to use the system to communicate with others using a single message (such as one sign or one button push).
5. Combining Words Using AAC	Child is able to use the AAC system to get functional wants and needs met but is not yet using the system to combine words or create phrases/sentences consistently	Child is taught how to use the AAC system to combine words to create short phrases or simple sentences. Targeted practice provides many opportunities for the child to practice new combinations and sentence structures.
6. Teaching Grammatical Markers and Linguistic Components using AAC	Child is able to create simple phrases and sentences using the AAC system but is not yet using AAC to practice correct use of grammatical markers and other linguistic components	Child is taught how to include grammatical markers and other linguistic components to create full, complex sentences to communicate with those around him. This allows the child to practice complex language structures before his speech mechanism is able to practice them.
7. Using AAC for School and Learning	Child is able to use grammatical markers and linguistic components in sentences with AAC but is not yet using his AAC system to participate in learning and classroom activities	Child is shown how to use AAC to participate in classroom activities and practice language skills learned in the school environment. Additional vocabulary words are added to the system as needed to allow the child opportunities to practice and use the language that is being taught at school.



Component 4: Prosody

Level	What it Looks Like	What to Work On
1. Attending to Variations in pitch, rate, and volume	Child is not yet aware of the concepts of pitch, rate, and volume	Expose the child to variations in pitch, rate, and volume and pair these variations with words to describe them. Opposites such as fast/slow, high/low, and loud/quiet should be introduced.
2. Demonstrating Prosody Variations in Non-Speech	Child is aware of the concepts of pitch, rate, and volume but is not yet able to demonstrate variations in these with speech	Help the child demonstrate variations in pitch, rate, and volume with non-speech (sound effects or noises). Demonstrations should start with opposites for contrast (high/low, etc) and move to more subtle variations.
3. Demonstrating Prosody Variations in Speech	Child is able to demonstrate variations in pitch, rate, and volume in non-speech but is not yet doing so in single words	Have the child demonstrate variations in pitch, rate, and volume with single words or nonsense syllables. Start with opposites for contrast and move to more subtle variations.
4. Using Appropriate Prosody in Single Words	Child is able to demonstrate variations in prosody with single words or non-sense syllables but does not always speak single words with appropriate prosody	Help the child understand how to speak single words with correct prosody. Talk about which syllable gets stress (loudness), the rate at which certain sounds or syllables are spoken (rate), and how pitch variations can make the word sound more like a question, statement or exclamation.
5. Using Appropriate Prosody in Phrases and Sentences	Child is able to use appropriate prosody when speaking single words but phrases and sentences are spoken with incorrect prosody	Help the child understand how to use appropriate rate and pausing, intonation, and stress in phrases and sentences. Talk about how changes in pausing, intonation, and stress can change the meaning of a sentence.
6. Using Appropriate Prosody in Connected Speech	Child is able to speak sentences with appropriate prosody but connected speech is still produced without appropriate prosody	Help the child understand how to use the prosody strategies from previous levels in connected speech.





Activities to Come!

- I will be creating activities for each level of these hierarchies
- These will be included in an upcoming book or online course
- Stay tuned for more details!
- What would you like to see included in the book?
- How would you like to get it? (book, downloadable worksheets, video demonstrations, etc.)