Empowering Kids: Best Practices in Diagnosing and Treating CAS

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Learning Outcomes

As a result of this activity, the participant will be able to:

1. Integrate assessment data to differentially diagnose CAS in children
2. Formulate functional and achievable goals
3. Apply motor learning theories to intervention
Agenda

10 minutes - Introduction

20 minutes - Setting the Stage: Definitions and Concepts

35 minutes - Assessment Techniques and Differential Diagnosis

45 minutes - Goal Setting and Intervention

10 minutes - Wrap Up and Q&A
An Introduction
A Little About Me

- Currently...
- Previously...
- Experience with CAS
What to Expect in this Presentation

- Focus on actionable information
- Opportunity for questions
- Silly memes, gifs, and animals pics
Scan to Access Updated Slides and Resources
Now, a Little About You
Respond at PollEv.com/staciehatfield 284
OR
Send staciehatfield284 to 37607
OR
Scan this QR code
Setting the Stage: Definitions and Concepts
What is Childhood Apraxia of Speech?
CAS is a neurological motor speech disorder.
CAS is NOT caused by muscle weakness or structural deficiencies

Image credit: [en.wikipedia.org/wiki/Weak_%28AJR_song%29](https://en.wikipedia.org/wiki/Weak_%28AJR_song%29); [https://www.crevalleconsulting.com/general-7](https://www.crevalleconsulting.com/general-7)
CAS impacts one’s ability to **plan** and **program** precise movements for speech production.

Movements for speech are unbelievably complicated!
CAS is a disorder of movement.
What Motor Learning Principles are Pertinent to CAS?
Some key motor learning principles that are relevant to CAS include:

- **Prepractice**
  - Motivation
  - Understanding

- **Practice**
  - Amount
  - Frequency
  - Length
Other Important Concepts
Incorporating multisensory cues, person-centered care, and functionality into treatment is essential.

- Multisensory cues
- Person-centered care
- Functionality

Sometimes just getting *closer* to the target is progress!
Assessment Techniques and Differential Diagnosis
How do kids with CAS present?

- Highly unintelligible
- Very “vowel-y” speech, esp. with very young children
- Lots of open syllables
- Have unexpected sounds in inventory
- Missing expected sounds in inventory
- “Groping” when attempting speech
- Lots of communicative failures
Video Examples
Components of Assessment

- Intake interview
- Oral motor exam
- Phonemic and syllabic inventory
- Imitation tasks
- Communication sample
- Overall language skills
Gather information from caregivers in advance.

- Written questionnaire
- In person/phone interview
- Home recordings

Image credit: https://www.admission.org/advice/parent-private-school-interview-questions
Conducting an Oral Motor Exam and Imitation Tasks

- Adaptations for young children
- Imitation tasks
- Oral apraxia signs
- A word about CAS and oral apraxia

Image credit: therapytreeaz.com/what-happens-during-an-evaluation/
A communication sample can supply a lot of information.

- Preparing caregivers
- Naturalistic and play based
- Recording, if possible
- Using parent recordings
- Avoid tunnel vision

Image credit: news.cornell.edu/stories/2019/01/hands-intensive-parenting-best-most-parents-say
A phonemic and syllabic inventory will inform diagnosis and provide a foundation for goals.
## Progression of Syllable Shape Development in Children

Adapted from Fish, 2016

<table>
<thead>
<tr>
<th>Syllable Shape</th>
<th>Examples</th>
</tr>
</thead>
<tbody>
<tr>
<td>V</td>
<td>ah, oh, oooh</td>
</tr>
<tr>
<td>C</td>
<td>mmm, shhh</td>
</tr>
<tr>
<td>CV</td>
<td>me, hi, whee, no</td>
</tr>
<tr>
<td>VC</td>
<td>up, in, it, eat</td>
</tr>
<tr>
<td>VCV</td>
<td>icky, icy</td>
</tr>
<tr>
<td>CVCV</td>
<td>mama, dada, booboo</td>
</tr>
<tr>
<td>CVCV&lt;sub&gt;2&lt;/sub&gt;</td>
<td>mommy, daddy, baby</td>
</tr>
<tr>
<td>CVCV&lt;sub&gt;2&lt;/sub&gt;V&lt;sub&gt;2&lt;/sub&gt;</td>
<td>money, happy, hippo</td>
</tr>
<tr>
<td>CVC</td>
<td>pop, mom, dad</td>
</tr>
<tr>
<td>CVC&lt;sub&gt;2&lt;/sub&gt;</td>
<td>hot, bus, book</td>
</tr>
<tr>
<td>CVCVCV</td>
<td>banana, potato</td>
</tr>
<tr>
<td>CVCVC</td>
<td>donut, button, hopping</td>
</tr>
<tr>
<td>CVC CVC</td>
<td>cupcake, goodnight</td>
</tr>
<tr>
<td>Double clusters</td>
<td>spoon, black</td>
</tr>
<tr>
<td>Triple clusters</td>
<td>splash, string</td>
</tr>
<tr>
<td>Multisyllables</td>
<td>alligator, helicopter</td>
</tr>
</tbody>
</table>
Video Example
Assessing language skills with kids with CAS can be challenging.

- Formal or informal assessment
- Poor intelligibility/limited verbal output impacts

## Differential Diagnosis

<table>
<thead>
<tr>
<th></th>
<th>Consistent errors</th>
<th>↓ intelligibility with ↑ complexity</th>
<th>Articulatory groping</th>
<th>Vowel errors</th>
<th>Limited phoneme repertoire</th>
<th>Issues with prosody</th>
</tr>
</thead>
<tbody>
<tr>
<td>CAS</td>
<td></td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Phono</td>
<td>X</td>
<td></td>
<td></td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Artic</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
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</tr>
</tbody>
</table>
Video Example
Explaining a CAS diagnosis to parents

- **0-3 months**: Cooing
- **4-6 months**: Combining vowels with consonants
- **7-9 months**: Babbling - reduplicated then variegated
- **10-12 months**: Conversational babbling
- **~12 months**: First real words
Diagnosis is not always clear...and that’s okay.

“Do the best you can until you know better. Then when you know better, do better.”

- Maya Angelou
Goal Setting and Intervention
Deciding on Goals and Dosage

Goals- To Live the Life this Dog Has
Use motor learning principles to determine dosage.

- Frequency of sessions
- Length of sessions
- Amount of practice in sessions
Treating CAS has 3 main steps

1. Focusing on functional communication
2. Expanding sounds and syllable shape repertoire
3. Further expanding and diversifying repertoire
The key to goals is to build on **strengths** and think functionally.

- What sounds does this child already have in their repertoire?
- What syllable shapes does this child already use?
- What functional words can be targeted, given this information?
Some practice

• Phonetic inventory
  – Consonants: / b, p, m, s, t /
  – Vowels: / æ, a, i, o /
• Syllable shape inventory: /CV, CVCV, CVC, CVCV₂/

What functional possible targets can you build from these pieces?
Get input from the child’s caregivers, too.
A quick word about AAC...
Begin expanding the child’s sound and syllable repertoires.

- What sounds are missing from their repertoire?
- What syllable shapes are missing from their repertoire?
Further expanding and diversifying their repertoire

• Combine previous targets into compound words
  – Ex. base + ball = baseball

• Use carrier phrases
  – Ex. I like, I see, I have, You have, A big, A small, etc.
Incorporate work on prosody throughout

Image credits: freepik.com/premium-vector/kid-opposites-loud-quiet_4808217.htm; musicalsanctuary.com/pitch-classes-octaves/
Incorporate multisensory cues into treatment.

Image credit: ernestdempsey.com/educational-resources-for-multisensory-learning-for-teachers-students/
Video Example
Family education and home practice are essential.

Video Examples
Materials for intervention

- **By far**, my favorite intervention materials are child-specific and clinician-made
- Be a savvy consumer of commercially available materials
- Change, adapt, discard, as needed

Image credit: amazon.com
Kaufman Speech Praxis Test
Kaufman Treatment Kit 1

apple a-pō ah-pō a-puh ah-puh ah-ō

Image credit: superduperinc.com
Moving Across Syllables

Image credit: superduperinc.com
Word and Phrase Flips

Image credit: superduperinc.com
40,000 Selected Words
Wrap Up and Q&A
CAS is a speech disorder affecting the planning of precision articulatory movements.

Key diagnostic indicators: inconsistent errors, groping, and decreased accuracy with increased complexity.

Shorter, more intense, more frequent sessions are most effective.

Intervention should focus on functional targets, incorporate multisensory cueing, and include home practice.
Selected References


Selected Web Resources

https://www.apraxia-kids.org/
https://rest.sydney.edu.au/
https://www.ndp3.org/