

Childhood Apraxia of Speech (CAS) INFORMATION FOR FAMILIES

Childhood Apraxia of Speech (CAS)

CAS is a motor speech disorder, probably of genetic origin, affecting the individual's ability to voluntarily make the right movements, when needed, during speech. Children with CAS can *sometimes* make movements involuntarily, while speaking that they cannot make voluntarily.

Children with motor speech disorders have difficulty with one or more of the following

- Producing their speech sounds;
- Remembering how to make and where to put their speech sounds; and,
- Organizing their speech sounds.

A clear diagnosis of Childhood Apraxia of Speech (CAS)

- May be possible at the initial consultation with the Speech Pathologist
- Or after a short period of therapy;
- Or after lengthy therapy;
- Or impossible, *especially* in very young children, or those with little or no speech.

Commitment

The Speech Pathology assessment, diagnosis and treatment of a child with CAS usually involve a long-term commitment for the therapist, for the child's family, and for the child.

Speech progress may be very slow

Even with appropriate diagnosis and intervention speech progress may be very slow. This can adversely affect the confidence of parents, and sometimes the confidence of the therapist too, as well as the "willingness" of the child to participate and cooperate in therapy sessions and homework. So building an effective therapy team you can trust is extremely important.

Team approaches to service provision may be: multi-, inter-, or trans-disciplinary

1. MULTI-DISCIPLINARY TEAMS

- An approach to service provision in which professionals from different disciplines work independently and report to the team. *Paul, 2002*
- Each professional provides clinical or educational services independently.
- Intervention and goals for the child are discipline-specific. For example, SLT will have SLT goals, OT will have OT goals, and so forth.
- The professionals usually communicate with the entire team at team meetings.
- Multidisciplinary teams, like teams with other structures, are not necessarily officially set up by an agency. They can "evolve" through community and professional networks.

2. INTER-DISCIPLINARY TEAMS

- A team approach in which professionals perform tasks within their discipline while sharing information and coordinating services. *Paul, 2002*
- Each discipline provides clinical or educational services independently.
- Professionals do their own thing AND communicate with each other.
- Communication between professionals and family is typically on an individual "need to know" basis: - in person or by phone - in written reports and email
- And the team has team meetings.

3. TRANS-DISCIPLINARY TEAMS

A team approach in which members from different disciplines work collaboratively to focus on shared goals. Team members work together and may cross discipline lines. *Paul, 2002*

- Each professional and family member contributes a specialist knowledge base.
- All share a unified knowledge base.
- All work within an integrated framework.
- Evolution of team structure is highly planned and collaborative.
- Services are integrated and family centred.
- "The Family" is an "equal" team member.
- Discipline boundaries coalesce.
- Co-ordination of services is facilitated.
- Family members, or a family member, may be the main agent/s of therapy.

Therapy Approaches for Childhood Apraxia of Speech

1. Cognitive-linguistic approaches

Children learn how to make sounds and learn rules determining where the sounds and sound sequences are used. For example, METAPHON, SUCCESSIVE APPROXIMATIONS, CYCLES

2. Sensory-motor approaches

Motor learning principles are used to help the child to accurately, consistently and automatically make speech movements, sounds and sound sequences. For example, NUFFIELD, EASY DOES IT FOR APRAXIA

3. Linguistic-motor approaches (multi-sensory approaches)

These comprise a combination of linguistic approaches and motor programming approaches.

For Example, BOWEN; CRARY; HALL, HAMMER; JORDAN & ROBIN; OZANNE; STACKHOUSE; STRAND; VELLEMAN; others

4. Cueing techniques

These treatment approaches include specific sensory, gestural, visual and imagery techniques, and are used in combination with one of the previous approaches. For example:

- PROMPT: gestural, tactile, visual cues
- Cued Articulation: gestural, visual cues
- Imagery: Klein (windy, poppy)

The targets and activities that are incorporated into therapy depend on:

- o The age of the child
- o The severity of the CAS
- o The particular manifestations of CAS present in *this* child
- o At *this* time

Characteristics of the child with CAS at 18 months to 3 years

- o Non verbal, or less than 60 words
- o Few consonants
- o Few people understand their speech
- o Mouth may look inactive / “unused”
- o Poor non-speech imitation
- o Poor speech imitation
- o Trying hard to communicate *somehow!*
- o Making up own signs
- o Frustrated - may persist until frantic or “retreat” readily
- o More tantrums than the “average” terrible-two (or more passive)

Therapy for the child with CAS at 18 months to 3 years

Oral motor play activities – only do them if oral apraxia is evident

- o And even then, use them advisedly and very sparingly
- o Learning non-speech movements will not help speech
- o Effectiveness claims for “oral motor tools and toys” / “Oral Motor Therapy” are, at best dodgy!
- o “Oral Motor Therapy” (as distinct from oral play) is not evidence based.
- o OMT is not a component of “best practice”
- o Don’t do OMT on the basis that “it can’t hurt” or “every little helps”

Oral sensory play activities (again, don’t go overboard doing these!)

- o Exploring the mouth - finding what’s in the mouth - finding “mouth parts”
- o Experiencing with the mouth feeling things – shapes, textures, temperatures, wet/dry

Phonemic stimulation activities aimed at adding to the consonant, vowel and phonotactic repertoire

- o Playing noise-making games to “fluke” new sounds
- o Stimulating for all phonemes (speech sounds)

Sound making activities emphasising increasing voluntary control

- o Making speech sounds on purpose
- o Making CV words on purpose
- o Making CVC words on purpose

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Signing

- Teach signs to relieve frustration
- Teach signs to facilitate language (tell families about the strong evidence-base for this)
- Teach recognition of visual cues: hand cues, letters, cue card pictures (snake for 's')
- Nurture receptive language.
- Nurture cognitive skills.

NOTE: The initial stages of therapy

- Are a big "learning curve" for parents
- Are a lot of work for parents
- Are lot of fun for the child - especially if parents and therapist incorporate: skills the child is good at, and activities the child enjoys

Tips (Adapted from Hammer & Stoeckel, 2001)

- Organize the environment to facilitate communication.
- Make some of the therapy as "invisible" as possible.
- Make some of the therapy as "visible" as possible.
- Choose nursery rhymes and songs (even TV commercials) with an eye towards how they can be used to promote progress on certain targets.
- Have communicative temptations in the form of toys or "desired objects" that are visible but not accessible by the child.
- Teach parents to provide input without always pushing the child to respond.
- Give explicit instruction in modelling and recasting (use slide shows).
- Choose target words/syllables that will be functional/powerful for the child so they are highly motivated to make their best attempt.
- Use FUN finger-plays, songs and drill-play activities with frequent "communication temptations"

HOMEWORK (Hammer & Stoeckel, 2001)

- Homework becomes a way of life for families of children with CAS from 18 months ...
- Can be accomplished in small ways that add up to significant change
- Explicit practice during sessions is valuable. Helps parents build confidence in their skills.
- Impresses on child that parents are part of the treatment team.
- Parents should be brought "on board" early on as team members, such as through making core vocabulary book / list.
- It is helpful to narrow down times of speech focus at home, and then expand so parents are not overwhelmed.

Characteristics of the child with CAS at 3 to 5 years plus

- May still be non-verbal, but typically:
- The child speaks, and is difficult to understand
- Receptive Language Score is consistent with 'mental age' or PIQ
- RLS is significantly better than ELS
- Typically, expressive language advances, but grammar, syntax, word retrieval may be poor

Examples

- Word-order "Not want book me"
- Pronouns "Why him cry?"
- Auxiliaries "That a big book" "It for mum"
- Verbs "Where her did got that?"
- Questions "What it is doing?"
- Circumlocutions "On top the house" (instead of "on the roof")
- Wrong word "table" for "chair"
- Reliance on favourite words "Bob" for all men, tools, trucks, etc "Rex" for fierce things
- Non-specific vocabulary "It in the thing" (instead of "The key's in the box")

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Groping (Silent Posturing)

- Groping, or trial and error, or searching behaviour to find the correct positions for the articulators may become more evident as the child gets older (as an artefact of therapy). The child may appear to be uncertain which sound they are after.

Using the mouth as a sensor

- Experiencing objects with the mouth (sucking and “tasting”)
- Fingers constantly in the mouth
- Taking food out of the mouth (to look at what they are feeling)
- Slurpy, sloshy sound-effects

May suddenly discover babbling and vocal play at an “older” age

- Especially children who were very quiet as infants
- Strings of sounds and syllables
- Intonation patterns
- Want the turn-taking routines they “missed” as toddlers (‘Round and round the garden...’)

Poor diadochokinesis (DDK)

- DDK may be OK for non-speech movements but not for speech movements
- Difficulty producing rapid syllable sequences par-tar par-tar; par-tar-car par-tar-car; puttaka-puttaka-puttaka ...
- Sound sequencing is difficult in words

Other features

- The child can produce more sounds than they are able to use in normal conversation
- Words spoken clearly on their own are mispronounced in phrases or sentences
- Good days and bad days (with their intelligibility)
- Inconsistent errors (no ‘pattern’ of errors in some, but not all, children with CAS)
- Errors are not necessarily developmental
- No ‘true’ phonological processes (or very few) in some, but not all, children with CAS
- May use a lot of signs and gestures - pointing and ‘pull and show’ - own made-up signs - sign system / picture system - Makaton / Signed English
- Noises / sound effects may substitute for real words e.g., tongue-click for “drink”
- Inconsistent speech performance says the *same* word - clearly (or quite well) at times, and unintelligibly at other times
- Errors increase (and change) if words are said repeatedly
- Vowel errors: e.g. *bed = bud*
- Voicing errors, e.g., *pat = bad*
- Rhythm of speech sounds odd (Prosody may sound “different”)
- Palate function difficulties - talking through the nose
- Poor intelligibility
- Oral apraxia may have resolved (if it was ever present)
- Eating difficulties may have resolved (if they were ever present)

Therapy for the child with CAS at 3 to 5 years plus

Priorities now ALSO include:

- Adding to the child’s sound repertoire
- Learning new sound sequences
- Making them more “automatic”
- Incorporating them into words → phrases → and so on
- Child may become very aware what therapy is “for”
- Important for them to take it seriously, but not become anxious or perfectionistic
- Trying “too hard” can make speech more difficult

Tips (Hammer & Stoeckel, 2001)

- Avoid “over cueing”.
- Check the level of cueing needed and fade gradually.
- Reduce direct verbal imitation ASAP.
- Balance new content with older content.
- Practice things they are “good at”.
- Alternate activities with a minimum of cues with activities with a maximum of cues.
- Avoid burnout.
- Keep therapy “fresh” - Many materials can be used to target different aspects over time.
- Use power words and phrases.
- Consider possible approximations given the child’s sound repertoire
- “Use what the child gives you”. This means keeping a close record of their output.
- Consider how sequencing skills can be advanced via syllable/word combinations.

Characteristics of the child with CAS in the primary school years

- Learning disabled (\pm ADHD) children with CAS are at a double disadvantage.
- Developmentally delayed (\pm ADHD) children with CAS are at a double disadvantage.
- Children with DCD (\pm ADHD) and CAS are at a double disadvantage.
- Rhythm / prosody may make them “different” at an age at which peer conformity is valued.
- They are developmentally ready to use “strategies” for learning new words, but often not mature / motivated enough to follow through.
- Therapy team may “lose” them around 9 or 10 years - especially boys - sometimes fathers (or grandfathers) can turn this around

Therapy for the child with CAS in the primary school years

- Use reading to provide cues, and feedback to facilitate speech progress
- Independent self-monitoring of speech clarity at sentence level becomes important
- A few sounds may need more work
- DDK may still be difficult - and need practice

Characteristics of the adolescent or young adult with CAS

- Speech intelligibility breaks down under pressure
- Have to consciously control their speech clarity
- Have to use strategies to learn to say new words - e.g., write them down / rehearse them
- May have untreated speech sound replacements - especially if they dropped out of therapy
- Certain treated sounds may have regressed
- Likely to have f/th, w/r, w/l, lisp
- Rate, rhythm, volume and pitch may be “wrong”
- Speech might sound too “rehearsed”
- May have grammatical errors (and be unaware of them)
- May have poor self-image of themselves as communicators

Therapy for the adolescent or young adult with CAS

- Older / self-referred
- Usually VERY motivated to practice
- DDK may still need work
- Untreated, or unsuccessfully treated sounds may now respond well
- Strategies are readily adopted
- “Expert reassurance” valued
- Many individuals with CAS have associated communication problems
- These communication problems often require treatment. They are not ‘part’ of the CAS, and can include: expressive language difficulties, word retrieval problems, poor social use of language, unusual pragmatics: e.g., poor eye contact poor conversational turn taking.

Responsibilities of the Therapist, Family and Child

after Hammer & Stoeckel, 2001

Responsibilities of the Speech-Language Pathologist

Follow best practice principles

- Educate parents re: CAS and its management
 - networking opportunities and available support
- Teach the child needed skills
 - be flexible with targets and strategies (not just NDP!)
 - Maximize production
 - maximize functional communication goals
- Have high expectations of the child
 - don't 'limit' what you think the child can do
 - encourage the child to perform optimally with an understanding of what the child is capable of at any given time.
- Take it as a "given" that the long-term goal is for the child to become as fully functional a communicator as possible.
- Be able to explain goals and changes in therapy strategies.
- Welcome "why" questions from parents.
- Ensure opportunities for periodic observations either in person or via videotape.
- Work with parents to motivate and reinforce child's learning.

Responsibilities of the Family

- Choose a speech pathologist skilled with children in your child's age-group
- It does not have to be a CAS expert!
- Preferable to have a Speech-Language Pathologist who is experienced with CAS and other childhood speech and language disorders.
- Learn about CAS and techniques.
- Work with the SLT to encourage (motivate) and reinforce child's learning.
- Be available at key times for observations or video viewing of sessions.
- Report openly about home practice frequency and child's responses.
- Understand treatment limitations, particularly when more complex negative prognostic indicators are present.
- Have high expectations of the child.
- Question anything not understood.

Responsibility of the Child

- Accept help from the Speech and Language Therapist and parents for learning to communicate more effectively.

Building a treatment team with families for children with CAS

- The core of a trans-disciplinary treatment *team* is the child with CAS and his/her family.
- The essence of the *therapy* is well-targeted (by a competent team) *homework*, well implemented by the family.

ASHA Position Statement on CAS

<http://speech-language-therapy.com/asha-ps-cas-2007.pdf>

ASHA Technical Report on CAS

<http://speech-language-therapy.com/asha-tr-cas-2007.pdf>
