

STUTTERING ASSESSMENT: MORE THAN DOTS & SLASHES

- o Ashlen Thomason, Ph.D., CCC-SLP



TRANSMISSION RISK

- o For males who have ever stuttered, the risk of stuttering is 22% for their sons and 9% for their daughters.
- o For females who have ever stuttered, it is 36% for sons and 17% for daughters.
- o 31% of adults who stutter have no family history (Andrews et al.,1983)



RECAP

- Function:
 - During speech: over-activation of right hemisphere language areas; de-activation of left hemisphere language areas
 - During stuttering: activation moves toward the left
 - Even imagined stuttering and non-speech oral motor movements can cause inappropriate patterns of activation
 - Differing auditory cortex processing: behaves as if there is constant auditory input, even during silent reading
 - Inappropriate basal ganglia function
- Structure:
 - PWS: signs of cortical disconnection immediately below the laryngeal and tongue representation in the left sensorimotor cortex
 - Reduced planum temporale asymmetry (larger in both hemispheres and less difference in lobe sizes)
 - Basal Ganglia asymmetry in children who stutter
 - Pars Opercularis (part of Broca's, functions in speech control) does not demonstrate the typical maturational pattern of gradual gray matter thinning with age across the lifespan



RISK ANALYSIS

o Risk factors for stuttering persistence into adulthood (26% of children who stutter):

- Family history of stuttering with persistence
- Male
- Steady or increasing stuttering severity since onset (particularly first 6 months)
- Exhibiting secondary movements 6-months following onset
- Exhibiting aberrant phonations (blocks or prolongations) 6-months following onset
- Exhibiting dysfluencies of ≥ 3 repetition units after 6-months following onset
- Late age of stuttering onset (after age 3;6)
- No natural remission over a year since stuttering onset
- Concomitant speech or language delays



RISK ANALYSIS

o Prognostic indicators for natural remission (74% of children who stutter):

- No family history of stuttering
- Family history of stuttering with natural remission in childhood
- Female
- Dramatic lessening in stuttering severity since onset (particularly first 6 months)
- No secondary movements 6-months following onset
- No aberrant phonations (blocks or prolongations) 6-months following onset
- Repetition units are less than three units in length 6-months following stuttering onset
- Early age of stuttering onset (before age 3;6)
- No concomitant speech or language delays



WHY CWS LESS THAN THREE YEARS SINCE ONSET?

- o A child who has stuttered three years past onset has less than a 5% chance of recovery.

(Yairi, Ambrose, & Niermann, 1993)

- o Children with mild stuttering still persist.

(Yairi & Ambrose, 2005)



SLDs vs ODS

- Stuttering-Like Disfluencies (SLDs)
 - Single-syllable whole word repetition
 - Part-word repetition
 - Prolongation
 - Block
- Other Disfluencies (ODs)
 - Phrase repetitions
 - Multisyllabic word repetitions
 - Interjections (“um,” “uh”)
 - Abandoned utterances



“IT’S DEVELOPMENTAL”

- False:
 - Mild stuttering is a normal part of speech development and will go away.
 - Kids who persist have “real stuttering,” while children with natural recovery were just going through a normal phase in development.
- Kids who do not stutter do not produce many SLDs. Normally fluent children’s disfluencies are rare and comprised of 90% ODs and 10% SLDs.
- If a child’s “disfluencies” are mostly SLDs, even if they’re “mild,” the child is stuttering. The disfluencies of children who stutter are on average 65% SLDs and 35% ODs.
- Stuttering, even if it results in natural recovery is a **disorder**.



PRESCHOOL ASSESSMENT: WHAT DO YOU NEED?

- Stuttering case history intake form
- Fluency count sheet (grids)
- Recording device
- SSI-3 or 4 form (can actually fill out after eval)
- TOCS (if the patient is above 4;0)
- Affective scale (likely KiddyCAT)
- Language screener or test
- Artic screener or test (No test for child with no errors)
- Hearing screening or audiology results



OPTIONAL

- Home programming handout
- Risk factors handout
- Indirect strategies handout



CLINICALLY RELEVANT INFORMATION
NOT INCLUDED IN MEDICAID GUIDELINES:

- Age of onset
- Types of dysfluencies
- Course of stuttering severity
- Reports of fluency in other environments
- Prognostic indicators
- Reports of affective impact
- Therapy techniques used in the past
- Dynamic assessment
- Treatments of interest to the patient
- Suggested goals



STEPS

- Gather case history
- Explain evaluation process
- Screen language, artic, and hearing
- Oral mechanism exam
- Get speech sample (open-ended questions)
- Affective scale
- Analyze results
 - Frequency, est. duration, secondaries
 - Risk factors for persistence recovery
- Results and risk analysis
- Dynamic assessment and home programming



STUTTERING SEVERITY INSTRUMENT

- Frequency- % syllables stuttered
 - Readers = above 3rd grade reading level
 - Non-readers
- Duration- Average of three longest stuttering events in sample
- Physical Concomitants- Secondary characteristics



SPEECH SAMPLE

- Open-ended questions:
 - What are the rules at yours house/school? Does everyone follow the rules?
 - Best tv show/movie? What happens? Then what? Who is the bad guy?
 - What do you do at grandma's house?
- Do not count:
 - Singing
 - Rote utterances (counting, days of week, memorized material)
 - Silly voices



SYLLABLE COUNTS

- Count each syllable
- Fluent syllables = dots
- Dysfluencies = slashes
- Do not make multiple slashes per dysfluency
- Example: "I want m-m-m-m-my bike."
 - ••-•
- Example: "She-she-she-she borrowed my favorite dress."
 - -•.....



DURATION

- Use a digital recorder that tracks the time on your sample. Note long dysfluencies as they happen while taking your fluency count by noting the time in the margins.
- Go back to those specific times. Listen to the dysfluencies again. Use a stopwatch (there's one on most smart phones) to time the dysfluency events from beginning to end.
- Take the average of the three longest in your sample.



PHYSICAL CONCOMITANTS

- Does the caregiver notice?
 - “Barely noticeable to casual observer”
 - “Distracting”
- Common: pitch rise, nodding, rapid blinking, articulatory posturing



KIDDY CAT

- 12 yes/no questions
- Not very valid or reliable (in my experience)
- Parents may report other signs of awareness
- May make further explanation in report to caution regarding results and give caregiver report



PEDIATRIC DYNAMIC ASSESSMENT

- Gives caregivers a glimpse at what therapy will look like
- Determines which cues the child responds to best to elicit the techniques
- Shows caregivers what to practice
- Promotes caregiver buy-in when they see effectiveness
- Includes caregivers so that clinicians can reduce “bad practice”



TOCS

- Test of Childhood Stuttering
 - Rapid naming
 - Sentence modeling
 - Structured storytelling
 - Open storytelling
- Normed from 4;0-12;11
- Can compare raw score to CWS and CWNS
- Only count SLDs in first three syllables
- Some language tasks too difficult for young children
- Only focuses on frequency, not duration, secondaries, or SLD type
- Great activities to get kids talking



SPI (NOT GOOD)

- Stuttering Prediction Instrument for Young Children
- Normed in 1984, pre-Illinois Longitudinal Studies
- Time since onset is asked but not scored
- Affective factors are scored
- Only 100 syllable sample
- Looks only at severity (number and length of SLDs)
- Doesn't count single-syllable whole-word repetitions
- Counts blocks under prolongations
- Calls “mild” stuttering “sub-clinical”



o Medicaid guidelines for the Stuttering Severity Instrument are problematic.

Why don't some kids with average stuttering qualify for treatment?

SECTION II-PAGE 26, 214.400, C-5:
o **FLUENCY:** At least two norm-referenced, standardized tests with good reliability and validity, and at least one supplemental tool to address affective components. Eligibility for fluency therapy will be based upon an SS of -1.5 SD below the mean or greater on the standardized test.
o Accepted tests:
• Stuttering Severity Instrument for Children and Adults- 3rd Edition (SSI-3) (Riley, 1994)
• Test of Childhood Stuttering (TOCS)
o "Newer editions of currently listed tests are also acceptable."

-1.5 standard deviations below the mean or greater on a standardized test

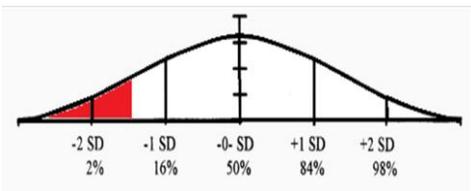


ARKANSAS MEDICAID THERAPY PROVIDER MANUAL (P. 29):

- **Mild:** Scores between 84-78; -1.0 standard deviation
- **Moderate:** Scores between 77-71; -1.5 standard deviations
- **Severe:** Scores between 70-64; -2.0 standard deviations
- **Profound:** Scores of 63 or lower; -2.0+ standard deviations



STANDARDIZED ON THE GENERAL POPULATION



STUTTERING SEVERITY INSTRUMENT- 3RD & 4TH EDITION

- Standardized on a **disordered** population:
 - 72 preschool children who stutter
 - 139 school-age children who stutter
 - 60 adults who stutter

- Total Overall Score =
 - Frequency
 - Duration
 - Physical Concomitants



INTENDED USE

- Develop goals and objectives
- Assist in tracking changes in severity during and following treatment
- Describe severity distribution in experimental groups that include people who stutter
- Validate other stuttering severity measures

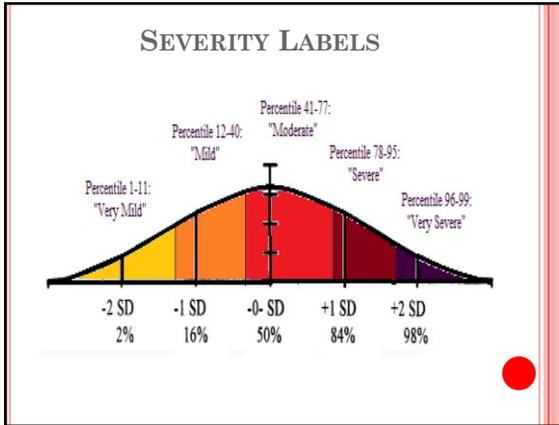
(Riley, 1994)

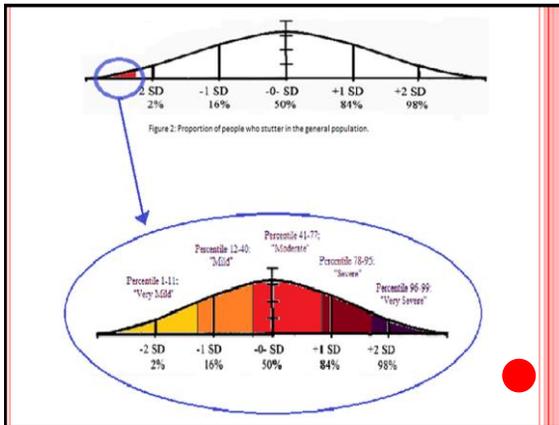


SEVERITY LABELS

- Expressing the level of severity of stuttering as a percentile is more precise than using the adjectives mild, moderate, and so fourth; the percentiles are the product of mathematical procedures, **whereas the adjectives were selected as logical but not mathematical.** The means and standard deviations for the subtests are the total scores at each level are shown in Table 5 (p. 12).







SOMEONE ELSE NOTICED

- Arkansas Medicaid Therapy Provider Manual Revision Q & A, #28, page 4:
- Eligibility for fluency therapy “will be based upon a SS of -1.5 SD below the mean or greater on the standardized test.” The only fluency test listed under the Standardized Speech Production Tests is the SSI-3 (which is our preferred fluency test); however, the SSI-3 doesn’t provide Standard Scores. It only provides a percentile and severity rating. Therefore, how can I qualify a child according to the guidelines?

ANSWER?

“A percentile rank that indicates a moderate deficit is acceptable in lieu of a standard score.”



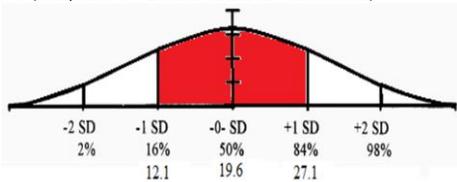
PROBLEM:

Accepting a score in the “moderate range” can mean that people with average stuttering (as compared to other people who stutter) do not qualify for treatment.



EXAMPLES:

- The average Total Overall Score on the SSI-3 for preschool children is 19.6 with a standard deviation of 7.5 (compared to 72 other children who stutter).

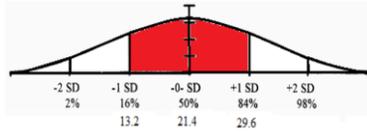


- A preschool aged child with a Total Overall Score of 16 would be considered “mild,” despite having average stuttering. This child could have 5% disfluencies lasting 1.5 seconds with no secondary movements to achieve a 16.



EXAMPLES:

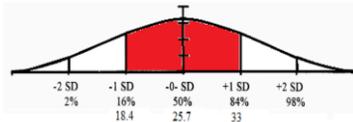
- The average Total Overall Score for a school-aged child is 21.4 with a SD of 8.2, normed on 139 school-aged children who stutter.



- A child with a Total Overall Score of 20 would be considered “mild.” This child could stutter 5% in conversation, 4% in reading, have dysfluencies that last up to 2.9 seconds, and have secondary movements labeled as ‘distracting.’

EXAMPLES:

- The average Total Overall Score for an adult who stutters is 25.7 with a SD of 7.3, normed on 60 adults who stutter (> age 16).



- An adult with a score of 24 would be considered “mild,” even though he/she could have 21% dysfluent syllables in speaking, 5% in reading, 2.5 second-long blocks, and secondary movements labeled barely noticeable to the casual observer.

PROPOSED CHANGES:

- FLUENCY: At least one norm-referenced, standardized test with good reliability and validity, and at least one supplemental tool to address affective components. Eligibility for fluency therapy will be based upon a standard score within 1.0 standard from the mean or greater on the standardized test. Exceptions to this scoring will be provided to patients whose scores are below 1.0 SD from the mean for:
 - Children within three years of stuttering onset who exhibit two of the following risk factors for persistent developmental stuttering:
 - Family history of stuttering in a first or second order relative
 - Males
 - Steady or increasing stuttering severity over a 6-month period
 - Dysfluencies of three or more units present 6-months past onset
 - Dysfluencies accompanied by secondary movements present 6-months past onset
 - Aberrant phonations (blocks or prolongations) present 6-months past onset
 - School-aged children and adults whose standard scores are within 1.0 standard deviation from the mean or greater when their speech sample is gathered from additional functional speaking tasks.

SPECIAL CONSIDERATIONS:

- Children who exhibit mild stuttering, are within three years since their age of onset, and exhibit well-evidenced risk factors for persistence
- School-aged children and adults whose Total Overall Score falls below 1.0 standard deviations from the mean for their age group during standardized tasks but exhibit markedly more severe stuttering in functional speaking situations



“MILD” BUT MODERATE FOR FUNCTIONAL ACTIVITIES

- Are we denying kids qualification for services and dismissing them from therapy based on “false fluency”?
 - Third grade = “readers”
- Limbic system activations and input are established components of conditioning and negative physiological responses to speech and stuttering.

(Logan, 1999; De Nil, Kroll, Kapur, & Houle, 2000; Alm, 2004)



FUNCTIONAL ACTIVITIES

- Consider samples during testing:
 - Reading aloud in class
 - Giving a presentation
 - Making a telephone call
- Classroom assessment:
 - Answering questions
 - Participating in class discussion
 - Ordering in cafeteria
 - Presentations



OTHER SAMPLE ISSUES:

- Is 200 for the SSI-3/4 enough?
- How many is enough?
- For school SLPs, what activities specifically have educational impact from which to sample?



ALTERNATIVES

- PWS already represent only 1% of the population, so should they all qualify?
- Should affective scale scores be considered?
- Weighted SLP analysis as suggested by Yairi?



MINDSET

- Alarmed patient and family
- Who wants evaluation and therapy?
- Misinformation still a factor
- Patient and caregiver guilt?
- Differential diagnosis?

- Goals:
 - "Full recovery" is not possible
 - Manage expectations and goals for therapy
 - Planning intervention
 - Reduce caregiver and client guilt
 - Increase patient and caregiver information
 - Discuss importance of support system



STEPS

- Gather case history
- Explain evaluation process
- Screen language, artic, and hearing
- Oral mechanism exam
- Speech sample (open-ended questions)
- Reading sample
- Affective scale
- Analyze results
- Dynamic assessment
- Discuss therapy options
- Results & Recommendations



WHAT DO YOU NEED?

- Stuttering case history intake form
- Fluency count sheet (grids)
- Recording device
- SSI-3 or 4 form (can actually fill out after eval)
- TOCS (if younger than 12;11)
- Reading passage (3 copies)
- Affective scale (I prefer OASES)
- Language screener or test (I like CELF-5 Screener)
- Artic: no test for no errors, screener, formal
- Hearing screening



FIRST IMPRESSION

- Greet and introduce
- Small talk: initial impression of willingness to talk, articulation, and language
- Ask about main concern
 - Let family and client get it all out before asking other background questions
- Ease fear:
 - Tell the client what's going to happen
 - Let the client choose the testing order



CLINICALLY-RELEVANT BACKGROUND INFORMATION

- Time since onset
- Family history (recovered or persistent)
- Types of dysfluencies
 - Demonstrate and have client and caregiver identify
- Secondary characteristics, starters, and/ or circumlocutions
- Easy and difficult communication situations
- Past therapy and testing experiences
- Strategies have worked and failed
- Word and sound fears



KICK OUT OPTION

- Older kids and teens often want their parents out of the room during the assessment. Some are fine with the parents staying.
- They may open up more about affective components, word and sound fears, and the use of self-taught strategies without judgment.
- Usually participate more in initial dynamic assessment.
- Bring parents back in for counseling and home programming.



SPEECH SAMPLE

- Conversation with examiner
 - Open-ended questions
 - All ages love to tattle
- Conversation with caregiver
- Higher-level language tasks:
 - Defining multiple-meaning words
 - Re-telling stories
 - Describing



NOT GETTING ANYTHING?

- Avoiding speaking:
 - Kick parents out
 - Test of Childhood Stuttering (TOCS)
 - Tell them why you need a more elaborate sample
 - Quick response questions
- Very mild or essentially fluent:
 - Presenting complaint: communication situations
 - Put them on the phone (audio sample)



READING SAMPLE

- Three copies of a passage with a known syllable count:
 - The client's
 - 1st trial to mark for SSI-3
 - 2nd trial to mark for adaptation effect
- Mark pages with symbols for dysfluencies
- Great opportunity to show clients the adaptation effect and choral reading
- Talk about type of blocks, ask questions about anticipation and tension



ALWAYS ASK

- Is your speech today a good representation of how you usually sound? Better or worse? Why?
- After seeing more speech, ask again about dysfluency types, tension, and anticipation.



AFFECTIVE SCALE

- Consider age and reading level
- Always explain the directions
- Explain that the answers are private, and SLPs will understand scores
- Smiley face likert scale for younger kids
- Don't "react" to any extreme responses
- Mailing it back to you



LOOSE ENDS

- Language screener
- Oral mechanism exam
- Hearing screening
- Articulation, subjective judgment of formal measure
- Voice
- Resonance



PATIENT COUNSELING

- Etiology
- Persistence: hard conversation
- Expectations about role of therapy
- Debunking past therapy experiences
- Patient-oriented goals
- Questions
- Therapy setting preference



DYNAMIC ASSESSMENT

- Fluency-inducing conditions
 - Explain why these aren't functional.
- Fluency-enhancing techniques
 - Touch throat for continuous voicing
 - Audible /h/ for easy onset
 - Model slow rate
- Carrier phrases
- Reading



DYNAMIC ASSESSMENT

- Introduce Stuttering Modification
 - Stutter more fluently
 - Anticipation of stuttering events
 - Will patient practice a stuttering event after you?
 - Tension and release with blocks
 - Explain and demonstrate techniques



PATIENT-CENTERED GOAL PLANNING

- Does he or she want speech therapy?
- Which approaches did they like?
- School therapy?
- Communication situations? Create hierarchy.



CAREGIVER COUNSELING

- Bring parent back in
 - Etiology
 - Persistence
 - Expectations about role of therapy
- Weigh in about goals
- Therapy options



HOME PROGRAMMING

- Show parent fluency-enhancing techniques
- Does the patient recall them independently?
- Rotate use of fluency-enhancing techniques in single words and phrases
 - Watch for continuous phonation
- Send with handout



CLOSING

- Questions and concerns
- Compliment courage of client. Let parents know that what the patient did is a big deal.
- Talk about support system