

Date: November 13, 2012

Title: Evidence Based Practice for Stuttering Home Programs in Speech-Language Pathology

Clinical Question:

P(population/problem):	Among preschool and early school age children enrolled in speech-language pathology services for stuttering
I(intervention):	does receiving stuttering therapy with a home program component*
C(comparison):	versus receiving stuttering therapy without a home program component
O(outcome):	lead to less stuttered syllables?

[Definitions for terms marked with * may be found in the Discussion/Synthesis of Evidence section.](#)

Target Population for the Recommendation

Inclusions: Children, age 2 and a half to 12 yrs. who present with a diagnosis of stuttering. Children may have another concomitant disorder but the focus of their treatment is stuttering. Co-existing disorders may include another speech, language or related disorder.

Recommendation (See Table of Recommendation Strength following references)

It is recommended that Speech-language pathologists (SLPs) provide services with a home program component for preschool and school age children who stutter to reduce their percent stuttered syllables (%SS) (Franken, Kielstra-Van der Schalk, & Boelens, 2005 [2a]; Jones et al., 2005 [2a]; Lattermann, Euler & Neumann, 2008, [2a]; Jones et al., 2008 [4a]; Koushik, Hewat, Shenker, Jones, & Onslow, 2011 [4b]; Koushik, Shenker, & Onslow, 2009 [4b]; Millard, Nicholas & Cook, 2008 [4b]; Miller & Guitar, 2009, [4a]; Trajkovski et al., 2009 [4b] and Yaruss, Coleman & Hammer, 2006 [4a]).

Discussion/Synthesis of Evidence Related to the Recommendation

A moderate body of evidence with consistent findings was found when comparing stuttering treatment models with a home program to treatment models without a home program. The evidence indicated that treatment with a home program led to a decrease in the %SS (Franken et al., 2005 [2a]; Jones et al., 2005 [2a]; Lattermann et al., 2008, [2a]; Jones et al., 2008 [4a]; Koushik et al., 2011 [4b]; Koushik et al., 2009 [4b]; Millard et al., 2008 [4b]; Miller & Guitar, 2009, [4a]; Trajkovski et al., 2009 [4b] and Yaruss et al., 2006 [4a]).

The amount and quality of research was highest for the Lidcombe Program (LP) (Jones et al., 2005 [2a]; Lattermann et al., 2008, [2a]; Jones et al., 2008 [4a]; Koushik et al., 2011 [4b]; Koushik et al., 2009 [4b] and Miller & Guitar, 2009, [4a]). For the LP, there were 2 randomized control trials (Jones et al., 2005 [2a] and Lattermann et al., 2008, [2a]), 2 cohort retrospective studies (Jones et al., 2008 [4a] and Koushik et al., 2011 [4b]) and 2 longitudinal studies (Koushik et al., 2009 [4b] and Miller & Guitar, 2009, [4a]). Five studies used inferential statistics and results ranged from $p < 0.0001$ to $p = 0.025$ (Jones et al., 2005 [2a]; Lattermann et al., 2008, [2a]; Jones et al., 2008 [4a]; Koushik et al., 2009 [4b] and Miller & Guitar, 2009, [4a]). One study compared the Demands and Capacities Model (DCM) to the LP and found no difference between the programs. Both programs showed a significant reduction in stuttering over time ($p < 0.01$) (Franken et al., 2005 [2a]).

Parent Child Interaction Therapy (PCIT), Syllable Timed Speech (STS) and Family Focused Treatment, each had evidence in only 1 study. Data on %SS was collected pre and post treatment (Millard et al., 2008 [4b]; Trajkovski et al., 2009 [4b] and Yaruss et al., 2006 [4a]). One study included inferential statistics and found significant results ($p < 0.001$) (Yaruss et al., 2006 [4a]). Two studies that demonstrated significant results but had small sample sizes and formal statistics were not used (Millard et al., 2008 [4b] and Trajkovski et al., 2009 [4b]).

No studies in the last 6 years focused on Gradual Increase in Length and Complexity (GILCU) (Ryan, 1974 [3a]; Ryan & Ryan, 1983, [5a] and Ryan & Ryan, 1995 [2a]) or Extended Length of Utterance (ELU) (Costello, 1983 [5a] and Ingham & Cordes, 1999 [5a]). GILCU and ELU have strong but limited evidence that was dated prior to 2005. Originally, the GILCU program was carried out by a SLP in a school setting without a parent training component. The programs have been adapted to be used with a home program. These programs may be considered but based on limited evidence prior to 2005; they should be used with caution.

Clinically, stuttering treatment with a home program is advantageous. Parents are with their children for a majority of the week. With sufficient training by a SLP, they can learn the techniques to carry-over their child's stuttering goals into the everyday environment. Children may improve faster and they may be discharged from therapy sooner because they are stuttering less.

SLPs may consider the evidence and choose one of the various home programs. Active participation by families is strongly encouraged to reduce a child's %SS.

Reference List (Evidence Level in []; See Table of Evidence Levels following references)

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IMPLEMENTATION

Applicability Issues

An applicability issue for the implementation of this evidence is initiation of a formal home program by providing verbal and written instructions, training families and discussing the benefits of home practice. SLPs may determine the home program that is best for each child by considering the child's age, severity, family history of stuttering and length of time since onset of stuttering and the families commitment level and parenting style.

Relevant CCHMC Tools for Implementation

Cincinnati Children's Hospital Medical Center; Division of Speech-Language Pathology-Parent and Family Education; "Fluency Pre-School Parent Handouts":

<http://centerlink.cchmc.org/WorkArea/linkit.aspx?LinkIdentifier=id&ItemID=29507&libID=29422>

"Helping the Child who Stutters":

<http://centerlink.cchmc.org/WorkArea/linkit.aspx?LinkIdentifier=id&ItemID=45997&libID=45912>

Outcome or Process Measures

The %SS is a real time count of 100-200 consecutive syllables. This may be measured under a variety of speaking conditions (i.e., monologue, dialogue, pressure dialogue, picture descriptions, etc.). A child's %SS is calculated by dividing the SLD disfluencies over the total number of syllables. In a %SS there are more typical word disfluencies or other disfluencies (OD). These are larger units of fragmentation (polysyllabic word repetitions, phrase repetitions, sentence revisions, interjections, hesitations and incomplete phrases). There are also less typical word disfluencies or

stuttering-like disfluencies (SLD). These are smaller units of fragmentation, and include part-word repetitions, single syllable word repetitions, sound prolongations, blocks, and tense pauses (audible tense vocalizations between words). Therapists make note of OD but they are not counted towards a child's %SS (Yairi & Ambrose, 1992 [4a]). %SS requires specialized training in stuttering to understand the different types and frequency of stuttering.

SLPs may also rate the child on a 10 point scale with 1 being no stuttering to 10 being extremely severe stuttering. In a comparison study, there was very high intrajudge and interjudge agreement for both %SS and severity scales. Severity rating scales are easy to use; require no expensive equipment and minimal training. Unlike %SS, parents can be trained to report daily severity ratings. Given the high agreement for both measures, they are regarded as largely interchangeable in the clinic setting (O'Brian, Packman, Onslow & O'Brian, 2004 [2a]).

Consistently documenting the type of treatment, %SS and/or severity rating for each child over time will assist SLPs to objectively monitor clinical outcomes in order to improve progress and ensure appropriate service delivery.

SUPPORTING INFORMATION

Background / Purpose of BES Development

Evidence for general home programs in speech-language pathology supported that parents are capable of completing a specialized home program outlined by their child's SLP (Mewherter, 2011, [5a]). There were no best evidence statements regarding specialized home programs for stuttering.

This clinical question was derived from professional observation that family involvement in the therapy process led to less stuttered syllables. However, a review of the state of current evidence was needed in order to determine best practice.

Definitions

Home Programs May Include:

Lidcombe Program (LP): The LP is a direct treatment for early stuttering. In Stage 1, parents are trained to administer specific verbal contingencies to their children in everyday speaking environments. Initially parents are instructed to provide contingencies in structured conversations and later, in unstructured conversations throughout the day. Parents may either acknowledge or praise fluent speech or request self-evaluation from their child. Less often, they may either acknowledge or request self-correction from their child in response to stuttered speech. Parents and children attend clinic sessions together and participate in an active home program until the child reaches zero or near-zero stuttering for 3 consecutive weeks. Once this criterion level is reached, the child enters Stage 2, a maintenance stage, at which time the goal is to maintain zero or near-zero stuttering for at least 1 year. During Stage 2, clinic sessions occur on less frequent intervals (Jones et al., 2005 [2a]; Lattermann et al., 2008, [2a]; Jones et al., 2008 [4a]; Koushik et al., 2011 [4b]; Koushik et al., 2009 [4b] and Miller & Guitar, 2009, [4a]).

Parent Child Interaction Therapy (PCIT) and Demand and Capacities Model (DCM): Developed to meet the needs of each individual child and his family. Parents are encouraged to discuss stuttering openly and acknowledge it with their child in an effort to minimize negative reactivity. Parents are taught to manage their child's stuttering indirectly by learning specific skills and providing fluency facilitating models of behavior (using comments rather than questions, modeling a slower rate, following their child's lead in play, praising their child, etc.) (Franken et al., 2005 [2a] and Millard et al., 2008 [4b]).

Family Focused Treatment Approach: A treatment approach designed to help young children who stutter develop healthy communication attitudes and effective communication skills. It includes both parent-focused strategies to help parents modify their communication behaviors and reduce their concerns about stuttering

and child-focused strategies to help children modify their communication behaviors and develop healthy, appropriate communication attitudes (Yaruss et al., 2006 [4a]).

Syllable-Timed Speech (STS): Involves speaking with minimal differentiation in syllable stress. Each syllable is produced with a rhythmic beat and equal stress. STS is consistent with the LP model in terms of the criteria for Stage 1 and Stage 2 (Trajkovski et al., 2009 [4b]).

Gradual Increase in Length and Complexity (GILCU) and Extended Length of Utterance (ELU): GILCU involves 54 steps starting with 1 word utterances and gradually increasing to 5 minutes of fluent speaking in reading, monologue and conversation. Children are told “good” and receive redeemable tokens, after each correct response. Negative feedback is given for stuttering “Stop, speak fluently” (Ryan, 1995 [2a]). For ELU, children are given verbal praise and tokens for single fluent words, 2 consecutive words, 3-6 consecutive words, 5-90 seconds of fluent monologue and then 2-5 minutes of fluent monologue. Before the next stage is reached, the child must achieve 92-100% fluent speech (Costello, 1983 [5a] and Ingham & Cordes, 1999 [5a]).

Search Strategy

*Databases: American Speech and Hearing Association (ASHA), Medline, the Cochrane Library and CINAHL.
 Search Terms: parent, speech therapy, caregiver, home program, fluency, stuttering, Lidcombe, GILCU and extended length of utterance
 Limits: English
 Search Dates: January, 2005 to December, 2011; searched for GILCU and ELU, without date limits
 Date last search done: April 12, 2012*

Group/Team Members

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Conflicts of Interest were declared for each team member:

- No financial or intellectual conflicts of interest were found.
- No external funding was received for development of this BEST.
- The following conflicts of interest were disclosed:

Note: Full tables of the [LEGEND evidence evaluation system](#) are available in separate documents:

- [Table of Evidence Levels of Individual Studies by Domain, Study Design, & Quality](#) (abbreviated table below)
- [Grading a Body of Evidence to Answer a Clinical Question](#)
- [Judging the Strength of a Recommendation](#) (dimensions table below)

Table of Evidence Levels (see note above):

Quality level	Definition
1a [†] or 1b [†]	Systematic review, meta-analysis, or meta-synthesis of multiple studies
2a or 2b	Best study design for domain
3a or 3b	Fair study design for domain
4a or 4b	Weak study design for domain
5a or 5b	General review, expert opinion, case report, consensus report, or guideline
5	Local Consensus

†a = good quality study; b = lesser quality study

Table of Language and Definitions for Recommendation Strength (see note above):

Language for Strength	Definition
It is strongly recommended that... It is strongly recommended that... not...	When the dimensions for judging the strength of the evidence are applied, there is high support that benefits clearly outweigh risks and burdens. <i>(or visa-versa for negative recommendations)</i>
It is recommended that... It is recommended that... not...	When the dimensions for judging the strength of the evidence are applied, there is moderate support that benefits are closely balanced with risks and burdens.
There is insufficient evidence and a lack of consensus to make a recommendation...	
<i>Given the dimensions below and that more answers to the left of the scales indicate support for a stronger recommendation, the recommendation statement above reflects the strength of the recommendation as judged by the development group. (Note that for negative recommendations, the left/right logic may be reversed for one or more dimensions.)</i>	
Rationale for judgment and selection of each dimension:	
1. Grade of the Body of Evidence	<input type="checkbox"/> High <input checked="" type="checkbox"/> Moderate <input type="checkbox"/> Low
<i>Rationale:</i> Participating in a home program decreases stuttering; significant effect sizes were found in several studies (Lattermann et al., 2008, [2a]; Franken et al., 2005 [2a], Jones et al., 2005 [2a]; Miller & Guitar, 2009, [4a]; Jones et al., 2008 [4a], Yaruss et al., 2006 [4a]; Koushik et al., 2009 [4b]). See the discussion/summary above.	
2. Safety/Harm (Side Effects and Risks)	<input checked="" type="checkbox"/> Minimal <input type="checkbox"/> Moderate <input type="checkbox"/> Serious
<i>Rationale:</i>	
3. Health benefit to patient	<input type="checkbox"/> Significant <input checked="" type="checkbox"/> Moderate <input type="checkbox"/> Minimal
<i>Rationale:</i>	
4. Burden on patient to adhere to recommendation	<input checked="" type="checkbox"/> Low <input type="checkbox"/> Unable to determine <input type="checkbox"/> High
<i>Rationale:</i> In the LP, mothers reported that obstacles included finding time to fit in therapy, forgetting to implement therapy and siblings. They were able to find solutions to the obstacles. They reported that despite the obstacles, there were significant benefits, such as an increase in quality time with their child, an improvement in parenting skills and an increase in stuttering knowledge and management (Goodhue, Onslow, Quine, O'Brian & Hearne, 2010 [5a]).	
5. Cost-effectiveness to healthcare system	<input checked="" type="checkbox"/> Cost-effective <input type="checkbox"/> Inconclusive <input type="checkbox"/> Not cost-effective
<i>Rationale:</i> It is cost-effective to train parents as part of a child's therapy session. Theoretically, the more parents participate in a home program, the quicker the child will decrease their stuttering and the sooner they may be discharged. This will allow SLPs to serve more patients and families waiting for services, thereby providing faster access to needed SLP services. There may be minimal cost for printing parent instructions, sheets for data collection and staff training.	
6. Directness of the evidence for this target population	<input checked="" type="checkbox"/> Directly relates <input type="checkbox"/> Some concern of directness <input type="checkbox"/> Indirectly relates
<i>Rationale:</i>	
7. Impact on morbidity/mortality or quality of life	<input type="checkbox"/> High <input checked="" type="checkbox"/> Medium <input type="checkbox"/> Low
<i>Rationale:</i> It is recommended that stuttering is treated early because if it "persists into the school-age years a child is exposed to the unacceptable risk of experiencing the disabling effects of chronic and intractable stuttering throughout life" (Jones, 2005[2a]). Common reactions of children to stuttering were frustration associated with their stuttering, withdrawal, reduced or changed verbal output, making comments about their inability to talk and avoidances (Langevin, Packman & Onslow, 2010[4a]).	

Copies of this Best Evidence Statement (BEST) and related tools (if applicable, e.g., screening tools, algorithms, etc.) are available online and may be distributed by any organization for the global purpose of improving child health outcomes.

Website address: <http://www.cincinnatichildrens.org/service/i/anderson-center/evidence-based-care/bests/>

Examples of approved uses of the BEST include the following:

- Copies may be provided to anyone involved in the organization's process for developing and implementing evidence based care;
- Hyperlinks to the CCHMC website may be placed on the organization's website;
- The BEST may be adopted or adapted for use within the organization, provided that CCHMC receives appropriate attribution on all written or electronic documents; and
- Copies may be provided to patients and the clinicians who manage their care.

Notification of CCHMC at EBDMinfo@cchmc.org for any BEST adopted, adapted, implemented, or hyperlinked by the organization is appreciated.

Please cite as: Mewherter, M; Cincinnati Children's Hospital Medical Center: Best Evidence Statement: Evidence Based Practice for Stuttering Home Programs in Speech-Language Pathology, <http://www.cincinnatichildrens.org/svc/alpha/h/health-policy/best.htm>, BEST 137, pages 1-7, 11/13/12.

This Best Evidence Statement has been reviewed against quality criteria by two independent reviewers from the CCHMC Evidence Collaboration. Conflict of interest declaration forms are filed with the CCHMC EBDM group.

Once the BES_t has been in place for five years, the development team reconvenes to explore the continued validity of the BES_t. This phase can be initiated at any point that evidence indicates a critical change is needed. CCHMC EBDM staff perform a quarterly search for new evidence in an horizon scanning process. If new evidence arises related to this BES_t, authors are contacted to evaluate and revise, if necessary.

For more information about CCHMC Best Evidence Statements and the development process, contact the Evidence Collaboration at EBDMinfo@cchmc.org.

Note

This Best Evidence Statement addresses only key points of care for the target population; it is not intended to be a comprehensive practice guideline. These recommendations result from review of literature and practices current at the time of their formulation. This Best Evidence Statement does not preclude using care modalities proven efficacious in studies published subsequent to the current revision of this document. This document is not intended to impose standards of care preventing selective variances from the recommendations to meet the specific and unique requirements of individual patients. Adherence to this Statement is voluntary. The clinician in light of the individual circumstances presented by the patient must make the ultimate judgment regarding the priority of any specific procedure.