

What Are the Options for the Treatment of Stuttering in Preschool Children?

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ABSTRACT

Treatment of stuttering during the preschool years is considered to be the best prevention of persistent chronic stuttering; however, many clinicians do not feel comfortable treating stuttering and may be confused about choosing an intervention. This article summarizes the history of direct and indirect methodology for treatment of stuttering in preschool children. It provides an update of contemporary treatments and discusses issues related to the timing of treatment. Guidelines for choosing a level of treatment based on the risk of a preschool child continuing to stutter are discussed, with examples of which children would be most appropriate for which level of intervention.

KEYWORDS: Stuttering treatment, preschool children, guidelines

Learning Outcomes: As a result of this activity, the reader will be able to (1) summarize the treatment of preschool stuttering from a historical and contemporary context; (2) select appropriate treatment procedures for preschool children; (3) evaluate appropriateness of treatments on the basis of the risk for persistence of stuttering.

Most stuttering has its onset in early childhood. Onset typically occurs between the ages of 2 and 4, with onset peaking before 6 years of age.^{1,2} Initiating stuttering treatment during this period is recommended as best practice to prevent the development of persistent chronic stuttering. During this time, stuttering is in its simplest form and perhaps more tractable. Evidence supporting the effectiveness of early treatment has led to more support of

early treatment models. Proponents of early treatment argue that natural recovery becomes less likely the longer stuttering persists and that treatment can prevent the development of chronic stuttering.³⁻⁵

There are many viable early treatment options effective for reducing or eliminating stuttering, some of them differing in their treatment objectives. For the young child who stutters, “one size does not fit all”; however,

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clinicians may find themselves confused by the myriad of treatment choices. This article provides guidance about the timing and choice of intervention. That choice should be supported by evidence, a good fit for the child and family, and within the clinician's expertise. Before selecting a treatment, clinicians need to know what the objectives of the treatment are, including methods of data collection, parent participation guidelines, whether the child actively participates in treatment, and the minimum competencies required of the treating clinician. The clinician should also be knowledgeable about information parents need to know, such as risk factors, causal factors, parent training procedures, and the available treatments and evidence supporting them.

Many clinicians may not feel confident treating early stuttering.⁶ This could be related to uncertainty and confusion about issues such as the best time to treat, what treatment to choose, how to evaluate risk, and how to distinguish between normal and stuttered disfluencies. In the last two decades, considerable attention has focused on a better understanding of assessment and treatment of stuttering at onset. To clarify some of these issues, this article presents an overview of preschool stuttering assessment and treatment. We provide a retrospective look at the historical context for treatment of preschool children, leading up to treatments arising over the past 20 years. Finally, guidance is provided for making informed decisions about the nature and timing of interventions.

HISTORY OF TREATMENT OF STUTTERING IN PRESCHOOL CHILDREN

Preschool children who stutter have been successfully treated for decades.⁷ In spite of this, there continues to be controversy over methodologies used. While early treatment can prevent the development of chronic stuttering, many preschoolers will recover naturally, without treatment,^{8,9} and predicting which children those might be is difficult. Treatment falls into two general categories: indirect and direct. Indirect treatment does not use overt or explicit methods with the child; rather, it tar-

gets parent counseling, and/or the use of the parent/clinician to model fluency facilitators for the child. Direct treatments usually explicitly teach the child to change something about the way the child speaks.¹⁰ In recent years, integrated combinations of direct and indirect treatments have been described.^{11,12} These treatments will be reviewed in the following sections.

Indirect Treatment

Concerns that bringing stuttering to the attention of young children could increase severity and negative awareness on the part of the child are still raised and debated by some, even though direct procedures that reduce stuttering have been successfully used for decades.¹³ More than 100 years ago, Fröeschels, an Austrian otolaryngologist and specialist in speech and vocal therapy, first warned parents against calling attention to their child's dysfluencies for fear that the child would develop true stuttering.¹⁴ Bluemel¹⁵ described the onset of stuttering as "primary stuttering," an easy relaxed form of disfluency that children would outgrow without treatment. He felt that telling a child to stop and start again after a stutter was bad advice that would create anticipation of difficulty and could lead to struggle and avoidance of speaking. Moreover, Wendell Johnson's¹⁶ diagnosogenic theory of stuttering onset suggested that stuttering is caused by mislabeling normal disfluencies as stutters. Johnson's concern was that correcting normal disfluencies could create a fear of disfluency in the child that leads to hesitancy and struggle. Indirect treatments initially grew out of these early ideas.

In the 1980s, the indirect approach was impacted by studies showing that other speech and language factors were related to the onset of early stuttering. The Demands and Capacities Model (DCM) was based on the hypothesis that some neurological limitations in a child's capacity to be fluent, impacted by demands related to speaking, could trigger stuttering.¹⁷⁻²⁰ The DCM posited that a breakdown in fluency was caused by the interaction between innate capacities—such as speech motor control, language development, social and emotional functioning, and cognitive abilities—and

environmental demands—such as conversational, social, and emotional pressures from the listener. The goal of treatment was to reduce those demands from the environment and increase the child's and family's capacity for emotional resilience in response to stuttering.

Treatment based on the DCM included parent counseling and training, as well as some direct treatment. Parents were counseled to talk about stuttering with the child, comment on moments of stuttering without asking the child to correct his speech, model easy disfluency, reduce speech rate and language levels to be compatible with the child's level, initiate turn taking in conversation, and question less and comment more in daily one-on-one talking time. To teach an easier form of stuttering, fluency-shaping techniques such as gentle onsets and light contacts were sometimes included. Programs described by Conture, Rustin et al, and Guitar were among the first treatments based on the DCM used by clinicians to shape parent-child interactions in the preschool years.^{11,21,22}

In the past 20 years, various *contemporary* indirect treatments have emerged.²³⁻²⁵ They share a common philosophy, and similar goals and strategies to the DCM. Treatment is often described using a multifactorial model of early stuttering, asserting that physiological, linguistic, environmental, and emotional factors create demands on the young child that increase stuttering. Intervention requires identification of the factors that may be affecting the child's fluency. Primary goals are to help parents learn about stuttering and to implement communication modifications in their interactions with their child. Parents are trained to modify those aspects of the child's environment that affect fluency by making positive changes in the child's functioning and/or in the environment to reduce stuttering.

These treatments can be individually modified and introduced to young preschool children soon after onset, when a parent is distressed about stuttering. For many parents, learning that there are factors within their control that can help them respond appropriately to stuttering can be helpful in reducing their anxiety and supporting a more fluent environment. When stuttering persists after indirect

treatment, many of these models introduce a more direct component. In the following, we describe four indirect treatments based, to a greater or lesser extent, on the DCM.

DCM treatment. The core DCM treatment (i.e., the treatment based on the model described earlier) emphasizes four dimensions that influence the development of stuttering: motoric, linguistic, socioemotional, and cognitive. The motoric dimension includes aspects of time pressure that might increase stuttering frequency or severity, while the linguistic dimension takes into account semantic, syntactic, phonological, and pragmatic aspects of language development. Socioemotional aspects are related to excitement and anxiety, while cognitive dimensions include the use of metalinguistic skills, including thought formulation and processing.

The DCM treatment was later adapted by Gottwald,²⁴ incorporating aspects of this indirect treatment, along with more direct treatment in the form of slow, relaxed interactions, modeling and identifying normal speech disfluencies, and attention to stuttering through identification and modification in parent-child interaction activities. Outcomes for DCM, reported for a small number of children, have shown the program to be effective.^{19,24}

Palin parent-child interaction (Palin PCI). This therapy approach was originated by Rustin and colleagues²² and manualized by Kelman and Nicholas.²³ Factors impacting the child's fluency are identified following a comprehensive assessment that consists of a detailed case history, language and fluency assessments, as well as an interview to consider the child's awareness and perspective. Individualized treatment based on the child's linguistic, environmental, and emotional strengths and needs is delivered in 6 weekly clinic sessions that may include interaction strategies, such as parents increasing pausing in their speech to reduce linguistic "time pressure," building confidence, and slowing speaking rate. With the assistance of the clinician, parents identify these strategies through observation of video recordings of parent-child interactions, and the strategies are practiced at home during short, regular one-to-one playtimes known as "Special Time." Clinic sessions are followed by a

6-week home consolidation period, during which the parents continue to implement the strategies and skills they have developed during the clinic therapy phase. They return weekly to discuss progress with the clinician. The major focus of this treatment is on changing parental attitudes and interactions with their child. Evidence suggests that a reduction in stuttering frequency also occurs by the end of the consolidation phase.^{26,27} If stuttering does not decrease, then more direct components are considered, with the child taking a more active role in the therapy process and making some modifications to his/her own speech and communication. A procedural manual and a clinician training program exists for this treatment.²⁸

RESTART-DCM. This treatment is also premised on the idea that positive changes in the child's functioning and/or in the environment will lead to a reduction of stuttering. If lowering environmental demands fails to resolve stuttering, speech fluency is targeted directly. Parents are trained to model slow, more relaxed, and smoother speech. If needed, the child's capacities for fluency are subsequently strengthened (e.g., improving the child's speech motor movements or language skills). Parents practice home assignments 15 minutes a day, for a minimum of 5 days a week. Treatment is gradually reduced as fluency increases, and as parents both master implementation of a fluency enhancing environment and can manage relapse. A manual and clinician training program are available.²⁹

Family-focused therapy. This form of indirect treatment is a multifactorial training that includes (1) education and counseling, (2) communication modification training, and (3) review and reassessment.¹² Parents are trained in six to eight, weekly 45-minute sessions. They complete a stress inventory to identify personality characteristics and environmental factors of the child that may affect communication and fluency, and they observe and chart the frequency and type of stuttering, listener reactions, and child's awareness outside of the clinic during natural conversation situations. Parents are trained to use DCM fluency facilitating strategies that include minimizing time pressure, modeling "easy, relaxed speech," and redu-

cing communication demands by modifying their questioning style. In review and reassessment sessions, the clinician meets with family members or caregivers to discuss progress or signs of relapse.

Direct Treatment

In what may have been the first direct treatment using response contingent feedback, Thompkins³⁰ directed parents to tell their children to stop talking and speak only when they could be fluent. Of course, this technique would never be endorsed today; nevertheless, this is an example of any early form of parent correction of stuttering. In his 1973 textbook,¹³ Van Riper recommended environmental changes, and cautioned parents to keep their children unaware of stuttering to prevent the development of avoidance and struggle; however, he also expressed some impatience with the indirect model (pp. 385; 399), and included more direct suggestions to parents to give attention and appreciation to the child for fluency by playing games to reinforce fluent utterances with food and prizes, and creating activities in which the child must produce a fluent utterance. He encouraged parents to acknowledge stuttering by repeating what the child says in a fluent way. This was done in a nonsystematic way, taking care that the child was not made highly aware of stuttering. These activities were part of a larger treatment program that also included desensitization to stressors and parent counseling to change the environment. Arguably, Van Riper's approach led to more acceptance on the part of speech-language pathologists for direct methods, and the focus on an integrated methodology formed the foundation for many contemporary treatments.

During the 1960–1970s, operant conditioning also became used in more systematic ways after it was shown that direct treatments based on use of reward or punishment were effective with adults who stuttered.^{31–33} A programmed, criterion-based treatment for school-age children using operant procedures to sustain fluency as they moved through a hierarchy that increased complexity of utterance and transferred fluency to everyday life was developed by Ryan and Van Kirk.^{34,35}

In 1972, Martin et al used a simple operant methodology with two preschool children to show that stuttering could be reduced, and fluency maintained for 1 year after treatment.³⁶ This was the first study to show that it was possible to reduce stuttering by calling attention to it, bringing the diagenetic hypothesis into question once again. However, since the children in this study were more severe and already aware of their stuttering, it did not pose a challenge to the indirect approach, which was mostly used with milder children who stutter. In another study, Reed and Godden³⁷ used a single subject design to demonstrate, again, that stuttering in young children was markedly reduced when they were told to “slow down” following a moment of stuttering. In this multiple baseline design, stuttering returned when the baseline condition was applied, decreasing again when the treatment condition was reinstated. Recordings from beyond clinic situations 8 months after therapy ended showed that stuttering was reduced to 1% stuttered words for the two children in the study.

Costello³⁸ used operant procedures with preschool children in the form of tokens and verbal praise for fluency and verbal corrections for moments of stuttering, while gradually increasing the length and complexity of utterance as the child continued to be fluent. This extended length of utterance program is a criterion-based treatment combined with operant conditioning principles. Fluency is established from the sound level to the mono- and multisyllabic word level, to word combinations, and, ultimately, to a monologue and conversational level. While generalization was often spontaneous, parents were trained to praise fluency at home, to aid generalization, but not to correct stuttering.

Lidcombe Program (LP). With these studies as a foundation, Mark Onslow and his colleagues developed the LP.³⁹ This direct treatment trains parents to provide systematic verbal contingencies for stutter-free and stuttered speech in the clinic and in everyday speaking situations. Clinicians used the feedback provided from daily measures of stuttering in home situations to evaluate progress or lack of progress in therapy. The LP provides direct feedback to children who may be unaware of

stuttering prior to treatment. The goal of treatment is significant reduction or elimination of stuttering. Parents are taught to conduct the treatment during everyday conversations with their children. The role of the clinician is to train the parent to initially deliver short daily practice sessions and to slowly introduce the verbal contingencies for stutter-free speech and stuttering into the natural conversations of the child’s daily life. It is the clinician’s role to ensure that the children progress through the program in a timely manner and the daily perceptual rating of severity made by both parents supports that process. Children are not expected to understand the treatment, monitor their speech or modify speech in any way. They are expected only to engage in conversation with their parents during practice sessions and natural conversations. In the LP, verbal contingencies emphasize the positive reinforcement or praise of fluency, with minimal correction of unambiguous stutters. The goal of Stage 1 is to reduce the frequency of stuttering to an insignificant level; children maintain this level for a longer period during Stage 2. The average treatment time in Stage 1 is 16 weeks, and that of Stage 2 is typically between 10 and 12 months. The LP is supported by the most comprehensive body of research to date on direct treatment of stuttering in young children.⁴⁰ It can also be used in group format⁴¹ or through a telehealth application.⁴² A training manual and clinician training workshops for this treatment are available.⁴³

Westmead Syllable Timed Speech (STS)

Program. Unlike other direct interventions that may be more appropriate for the older preschool child, this program is intended for treatment of stuttering close to onset. Syllable-timed speech techniques have been used to treat stuttering in different forms for many years. Traditionally, this involved speaking with equal stress to a rhythmic beat in a robotic fashion. Another type of operant program, the Westmead Program^{44,45} is different from previous STS-based treatments in that it does not require a regular beat such as a metronome, or that the child speaks very slowly or in a monotone voice. The child is encouraged to speak at a near-normal or normal rate with natural pitch variation but using an irregular “sing song” rhythmic pace.

Treatment has two stages, similar to the LP, and is administered by the parent, who measures average stuttering severity daily using the 0–9-point perceptual severity scale. Parents model STS in conversation, and children learn and then practice the technique four to six times a day, for 5 to 10 minutes each time, until stuttering is significantly reduced or eliminated. This is followed by a period of maintenance where the treatment is slowly withdrawn under the supervision of a speech–language pathologist to minimize the risk of relapse.

Other forms of direct treatments. Many “nonoperant” treatments are described for preschool children. These treatments may focus on obtaining “smooth speech” through fluency shaping strategies based on prolonged speech principals that include gradual phonatory initiation, smooth transitions between words using imagery that appeals to children, or stuttering modification. The clinician and/or parent models a slow, relaxed speaking pattern that emphasizes reduced rate, smooth articulatory transitions, and slightly prolonged consonants and vowels, while preserving the natural intonation and stress patterns. These programs have helped preschool children to slow their speech by naming the slow rate (e.g., “turtle talk” and “slow, easy speech”).^{20,46} Sometimes analogies, games, and activities prepared at the child’s level are used to explain the concepts of slow-fast and bumpy-smooth speech. Other treatments utilize a methodology that gradually increases the length and complexity of utterance as the child continues to be fluent,³⁸ or they adapt the principles of stuttering modification to model easy, normal disfluencies as well as occasional stutters to demystify stuttering and help children gain a feeling of control over stuttering. They may also seek to demystify stuttering by asking the child to identify a stuttering moment by “catching” the parent or clinician.¹¹

Some clinicians have integrated indirect and direct approaches. For example, Yaruss et al¹² emphasized modeling slow, “easy” speech, as well as reducing communicative stressors, and recasting the child’s speech to support language development. This is in addition to identifying and problem-solving fluency stressors, parent education about the nature of

stuttering, and training for parents in charting and monitoring the child’s fluency development at home. While the majority of the 17 children in their study achieved normal fluency after receiving only the indirect component of treatment, the 6 remaining children demonstrated improved fluency following more direct methodology.

Summary of the Evidence for Preschool Treatments

Independent reviews of contemporary treatments of this age group consistently report that the LP is the treatment with the most comprehensive evidence base,⁴⁰ providing documentation from clinical trials, randomized controlled trials, case studies, and qualitative studies of parent experiences.

A recent study by independent researchers compared the LP to the RESTART-DCM.²⁵ This is the largest randomized clinical trial of a stuttering program to date, following 99 children in the LP and 100 children in RESTART-DCM therapy from pretreatment to 18 months after onset of treatment. The study found that both treatments were equally effective, with no evidence of differences between the two treatments; however, the LP treatment was considered to be the more cost-effective method.⁴⁷

The direct use of verbal contingencies by parents to increase stutter-free speech has shown to cause reduction in stuttering. However, studies examining the role of parental modification using indirect strategies such as reducing speaking rate, questioning, or interrupting have shown modest changes with small numbers of children.⁴⁸ In two non-randomized Phase 1 trials of the Palin Parent Child Interaction therapy, 4 of 12 children reduced their stuttering to 1% stuttering syllables or less.^{31,32} This is consistent with a study looking at outcomes of family-focused treatment, in which 6 of 17 children continued to stutter.¹² In a study of the outcomes of 17 children following the Westmead Program that uses syllable timed speech, 8 children reduced stuttering to 0.2% stuttered syllables (SS).^{26,27} To summarize, it appears that for some children, indirect approaches are effective, but for others, a direct approach is needed.

There is insufficient evidence at this time to support or refute the use of a direct intervention approach over an indirect approach in the treatment of preschool-aged children with fluency disorders. However, when children do stop stuttering, they have usually been assisted by some form of clinician-administered intervention with parental involvement. This may be a critical factor in facilitating and maintaining fluency at this age. Treatment benefits may also include stuttering reduction, improved parent awareness of the child's stuttering, and improved capacity to address the stuttering openly.

More studies of well-defined interventions targeted to preschool children are needed, especially studies comparing the relative effectiveness of one treatment over another. Hopefully, future research will identify the functional mechanisms that underlie the treatment effects of various programs for preschool children. Better understanding of what is responsible for the positive effects of early stuttering intervention may lead to the development of even more efficacious therapies.

THE TIMING OF INTERVENTION

The information gathered during an assessment should help the clinician answer questions that determine the presence of stuttering, the risk of the stuttering persisting, and the type or level of intervention to recommend. It may be helpful to ask the following questions as the first step in making that recommendation.

1. Is your goal reducing parental distress or reducing or eliminating stuttering?
2. What type of intervention will best meet your goals?
3. Will parents be involved in the treatment? Treatments that educate parents to take responsibility for beyond-clinic changes and collect data to chart weekly progress should be prioritized.
4. Will the treatment you recommend lead to acceptable outcomes outside the clinic and for the long term? Most treatments for stuttering result in reduction of severity in clinical settings. Of far greater importance is the generalization of clinical gains to everyday life. Treatment should include frequent

measures of stuttering severity, frequency, and type from both in and beyond clinic situations to inform progress. These measures allow for identification and problem solving when stuttering does not decrease. Alternative interventions should be explored if problems cannot be successfully resolved with the first treatment of choice.

5. Have the results of the treatment been demonstrated in the literature? Clinicians should be guided by treatments whose stated outcomes are measurable, effective, transferable to beyond-clinic settings, and enduring over time. Treatments with manualized formats, clinical training programs, and evidence to evaluate efficacy and effectiveness may provide the best guidelines for clinicians.

A MODEL FOR PRIORITIZING TREATMENT

A stepped care model is a system of delivering and monitoring treatments so that the most effective, yet least resource-intensive treatment is delivered to clients first, only "stepping up" to intensive or specialist services as clinically required.^{49,50} The goal is to have the right service in the right place, at the right time, delivered by the right person. The risk factors contributing to persistence in stuttering can be used as a guide to decision making.^{40,51-54} This model of treating preschool stuttering can be far less burdensome on the healthcare system than unnecessary treatment or deferred treatment, which may place a child at greater risk of persistent chronic stuttering development. We propose a stepped care model to stuttering, described later and outlined in Fig. 1. These guidelines are meant to be helpful in directing us toward a plan of treatment for each specific child. They do not necessarily form a treatment sequence for all children who stutter, nor are the guidelines rigid. A child may start at any point in this pyramid depending on risk of persistency of stuttering and presence of comorbid features.

According to this stepped care model, all children do not receive all treatments, nor does any particular child start at Level 1. The model

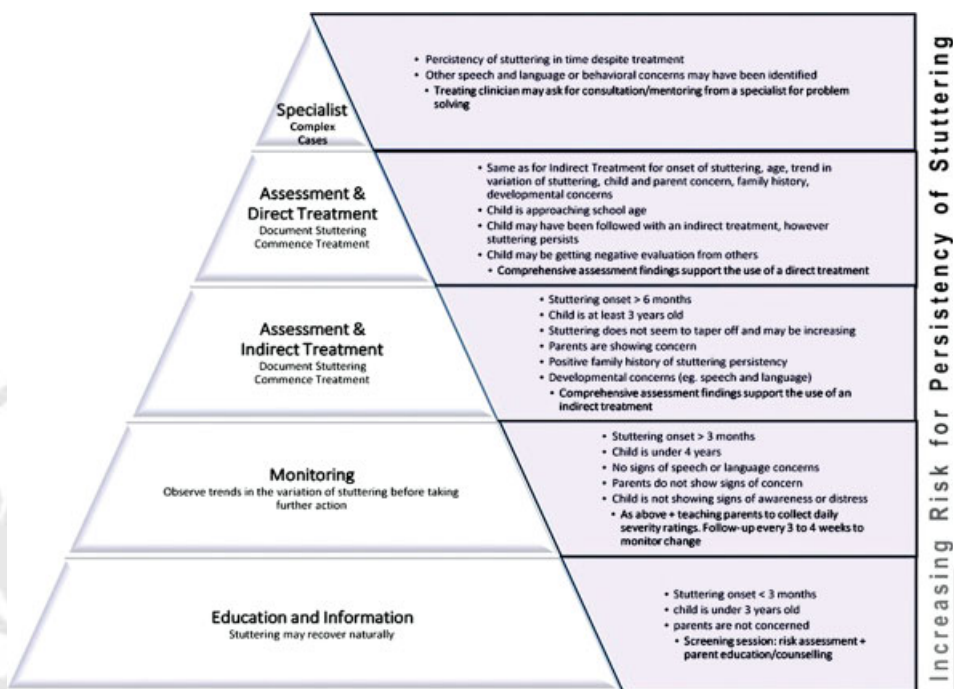


Figure 1 A stepped care model for preschool children who stutter.

is used as a guide for the timing of intervention as well as the most useful treatment for any particular child, based on the risk of continuing to stutter. For example, a child who is 4 years or older, who has been stuttering for more than 6 months, who may have a family history of stuttering, and for whom severity is increasing rather than decreasing could start treatment at Level 4. However, a child who is younger than 3 years, who has only been stuttering for a few weeks, and about whom parents are not distressed might benefit from Level 1 as the first contact, since the risk for persistence in this child is low. Furthermore, a child who has had treatment, but is not showing signs of progress after a reasonable period of time, and for whom there is suspicion of other speech and/or language concerns, would benefit from a consultation with a stuttering specialist (Level 5) for a chart review and problem solving. In this way, children with the greatest need for intervention are prioritized, but all children receive some treatment, leaving the majority of the resources for indirect or direct treatment when the timing is right. The treatment dosage is also critical in the prevention of client demotivation or bur-

nout that could take place when a child is exposed to excessive treatment without significant progress.

Level 1: Education and Information

This preliminary screening assessment is targeted for those children for whom the risk of persistent stuttering is low. Since a significant number of children recover without need of treatment within the first 3 months following onset, this level only provides parent education and counseling in a single session that could be implemented individually, in a group, or in telehealth format for efficiency. Those children who continue to stutter would go to Level 2.

Level 2: Monitoring/Watchful Waiting

At this level, parents are taught to rate severity using the 9-point perceptual scale, which is described in the LP, and return ratings every 3 to 4 weeks. If stuttering persists, worsens, or concerns increase, indirect or direct treatment would be recommended (Levels 3 and 4). In a preliminary study, 70% of the children

monitored 1 year in this type of a program recovered naturally from early stuttering without the need for further treatment.⁵⁵

Level 3: Comprehensive Assessment and Indirect Treatment

At this level, a more comprehensive assessment is indicated, and treatment would be recommended. Children who are 4 years of age or older, or children who are showing signs of awareness or distress and may be starting to receive negative feedback from listeners, could go directly to Level 4.

Level 4: Assessment/Direct Treatment

A comprehensive assessment (as recommended in Level 3) is done. However, in this case, the child has been stuttering for a longer time, or stuttering has persisted despite indirect treatment. The main objective in this level is to address stuttering in a direct manner to diminish it to extremely low levels or eliminate it. Although many children receive direct treatment around the age of 4 years, the Westmead Program or other direct programs may be appropriate for children closer to stuttering onset.

Level 5: Specialist Consultation

When treatment is not progressing, or when the case is complex, involving other speech and language or behavioral concerns, the clinician may choose to consult with a stuttering specialist for a case review. In these instances, further intervention should be performed by a speech-language pathologist who feels competent in this treatment and may be a specialist.

CONCLUSION

This article has presented an overview of treatment of preschool children who stutter and provided some guidelines for treatment as well as the timing for intervention. Through thoughtful clinical decision making and development of priorities for each child, speech-language pathologists can have the greatest impact in implementing efficient, highly effective treatment for preschool-aged children.

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