

# The Westmead Program Treatment Guide

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Cheryl Andrews, Natasha Trajkovski, Sue O'Brian, Mark Onslow

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## Overview

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### Qualified practitioner

It is essential that a qualified speech-language pathologist trains, guides, and supervises parents during the Westmead Program. The treatment is not designed for administration by parents independent of clinicians. This guide is intended as a reference tool for use by clinicians during treatment.

### A behavioural treatment

The Westmead Program is a treatment for young children that aims to reduce stuttering. Parents do not change the family lifestyle in any way, apart from encouraging the child to use syllable-timed speech (STS) during practice sessions, and occasionally throughout the day. The child's parents deliver the treatment in the child's everyday environment. The ultimate aim of the treatment is to achieve normal speech rate and speech that does not sound unnatural in any way.

### Syllable-timed speech

Syllable-timed speech involves saying each syllable in time to a rhythmic beat. For example, "The chil-dren are play-ing on the tram-pol-ine." Typically, STS produces vowels of similar duration for each syllable. For very young children, it can be useful to give STS a name, for example, "syllable talking".

### Origins of the treatment

It has been known for centuries that talking to a regular beat reduces stuttering. According to one model,<sup>1</sup> the speech motor systems of those who stutter may be susceptible to variations in linguistic stress. These variations are triggers for stuttering. Saying each syllable in time to a rhythmic beat reduces these variations and allows the child to produce and practise stutter-free speech. It is assumed that this helps to stabilise the child's speech motor system.

### Measuring stuttering

Regular measurement of the child's stuttering severity occurs during the Westmead Program with a Stuttering Severity (SR) scale: 0 = *no stuttering*, 1 = *extremely mild stuttering*, and 9 = *extremely severe stuttering*. Parents and clinicians use the SR scale during the program.

### Parent consultations

Parents initially consult with the clinician weekly, either by clinic visit or by webcam. Consultations reduce to fortnightly when the child can maintain STS for 5-10 minute practice sessions and is complying with practice sessions 4-6 times a day (see below for more detail). During each consultation, for around 45 minutes, the clinician teaches the parent how to do the treatment and ensures that it is being done properly. A later part of this treatment guide suggests what should occur during each consultation and in what order.

### Treatment goals during Stage 1 and Stage 2

The program is conducted in two stages. The treatment goal during Stage 1 is for the child to speak with no stuttering or almost no stuttering in everyday conversations, and the goal of Stage 2 is for no stuttering or almost no stuttering to be sustained for a long time.

## Resource materials

On the Australian Stuttering Research Centre website there is a downloadable SR chart (*Child Stuttering Severity Chart, eForm and PDF versions*) (<https://www.uts.edu.au/research-and-teaching/our-research/australian-stuttering-research-centre/resources/westmead-program>) for parents and clinicians. This SR chart is reproduced in the Appendices of this guide.

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## Measurement: the severity rating scale

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### Purpose of severity ratings

Severity ratings (SRs) are used to measure the child's stuttering in and outside the clinic. The simplicity of SRs makes them a quick and effective way for clinicians and parents to communicate to each other about a child's stuttering severity. They enable progress towards the Westmead Program treatment goals to be evaluated constantly. If progress is not satisfactory, then SR scores will alert the clinician and the problem can be addressed. Such problem solving, and subsequent decision making, is a routine part of the Westmead Program, and much of it centres on SRs. It is useful if clinicians explain the importance of SRs during the first consultation and reiterate this throughout the course of the treatment.

### Treatment goals determined by severity ratings

Parents assign a SR to their child's speech each day and the clinician assigns a SR during each treatment consultation. Long term treatment goals, weekly treatment decision-making, and progression through the program are all based on these scores (see "Syllable-timed Speech Practice: Overview," page 3).

### A flexible measurement

Severity ratings are a flexible way to measure stuttering severity. Each day parents record a SR for the whole day to reflect their child's typical stuttering severity for the day. In other words, they record the score they would have assigned for the majority of the day. Parents may not always hear their child talking all day, such as when they are at pre-school or childcare. In such cases, parents assign SRs based only on the speech they hear during the day.

Variations of the SR procedure can be used if the clinician thinks it would be helpful. One possible variation is one SR for the morning and one for the afternoon. Clinicians may wish parents to use supplementary SRs for particular speaking situations that occur each day, such as dinner, bath time, and shopping. Another option is for the parent to record a highest and lowest SR for each day. These SRs are recorded in addition to the daily typical SR.

### Valid and reliable parent severity ratings are essential

Research shows that parents are usually able to assign SRs that agree with those of a clinician<sup>2,3</sup> and the general community.<sup>4</sup> It is essential for clinicians to ensure that this agreement occurs, as treatment progression and problem-solving rely on the parent and clinician having a reliable means of communication. However, clinicians also need to be aware that the child's within-clinic speech, and hence their SR during the consultation, may not accord with parent scores from the child's everyday conversations. For various reasons, such as child shyness, reduced amount of conversational speech, or lack of variation in activities during the consultation, this SR may often be lower than the parent report of SRs around the home environment.

### Parent SR training

The parent is trained to use SRs either at assessment or during the first consultation. Training begins with the clinician explaining the reason for collecting measures and then explaining the scale and its end points. The parent or the clinician, or both, talk with the child for a few minutes until the child displays a reasonably representative amount of speech and stuttering. After a few minutes, the clinician asks the parent to assign a SR to the speech sample. The clinician indicates whether that is an appropriate score and, if necessary, suggests a different score.

This score is documented in the child's file. As noted above, clinicians need to be aware that this within clinic score is not necessarily representative of the child's everyday conversational stuttering severity score. Also, if

the child's stuttering increases significantly during the remainder of the session, possibly due to more representative speech being elicited, the latter score would be documented.

All subsequent consultations begin with a child conversation. The parent then assigns a SR score, and the clinician either confirms that the score is appropriate or provides corrective feedback. The clinician's judgement, based on clinical experience, is used as the yardstick for SR scores. Acceptable agreement is when the parent SR is within one scale value of, or identical to, the clinician SR. It is desirable, however, during the later stages of treatment, for parent and clinician SR scores to be identical. This is because, during those later stages of treatment, children's severity will be at the lower end of the severity range, and there will be less margin for error with clinical use of the scale.

Another more time efficient and valid speech sampling method—particularly early on in treatment—is for parents to audio or video record the child during one or more conversations of everyday life. This will provide a much more realistic measure of the child's stuttering severity. In this scenario, the clinician and parent will listen to the recording together and consider a SR score at the start of the consultation. This method has the advantage of being able to scan quickly through a long and representative set of recordings of the child's speech.

Discussion of the different types of stuttering in the child's speech is a useful part of a consultation. This is because clinical improvement, in terms of reduced stuttering, is often accompanied by a change in the type of stuttering a child presents with. One method of classifying stuttering behaviours<sup>5,6</sup> uses three main categories: repeated movements, fixed postures, and extraneous behaviours. A moment of stuttering may comprise one or more of these behaviours.

### Documenting severity ratings

Parents may produce hand-written SRs each week for the consultation or they can use an e-version of the form accessible on their computer or phone. Both PDF and e-versions of a "Child Stuttering Severity" template can be found at the ASRC website (<https://www.uts.edu.au/research-and-teaching/our-research/australian-stuttering-research-centre/resources/westmead-program>). A disadvantage of the parent producing a weekly collection of SRs is that the clinician cannot monitor whether parents are following their instructions properly and recording a score at the end of each day. Sometimes, parents are not compliant with that instruction and will wait a few days to record scores. This can lead to inaccurate scores.

Another option is for parents to send photos of the SR form to the clinician, either throughout the week or prior to each consultation. These options can also be used for the clinician to obtain SRs on occasions when parents are unable to attend a clinic consultation.

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## Syllable-timed Speech Practice

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### Overview

At the beginning of treatment, the clinician instructs the parent and child in the use of STS using demonstration, imitation, and practice. It is initially taught using a slowed speech rate, then, over time, progresses to a near-normal speech rate with normal intonation, volume, and pitch. Some children may need to maintain the slowed rate for some time, and other children may need to drop back to a slower rate at a later time if STS is difficult to maintain. The parent is instructed to model STS to the child at home and to encourage the child to use STS in practice sessions during natural everyday conversations.

STS practice sessions are initially encouraged 4–6 times per day for about 5–10 minutes each time. The number of practice sessions may be reduced gradually over time as the stuttering reduces. Treatment continues until the following criteria are met: (1) clinician SR of 0 or 1 during the consultation, and (2) daily parent typical SRs of 0–1 during the week preceding the consultation, with at least four of those seven SRs being 0. These criteria need to be met for two consecutive fortnightly consultations. At this time, the child progresses to stage 2 of the program where consultations become less frequent as long as stuttering reduction is maintained. During Stage 2, STS practice is only reintroduced if stuttering severity increases.

### Hierarchy of STS teaching

The treatment begins with the clinician teaching the child how to do STS while the parent watches. Picture books are useful for content. STS speech is voiced like this:

- The dog is run-ning;

- The kit-ten is lick-ing its paws
- The wo-man is rid-ing a brown horse

STS is introduced initially using imitation, with short sentences and slowed rate. Both imitation and slowed rate assist the child to achieve correct production of the speech pattern and are important teaching techniques. However, it is also important to use and encourage normal volume, pitch and intonation. Each syllable should be joined to the next one in a smooth flowing manner (*legato*) rather than punched out with each syllable separated from the next one (*staccato*).

When the child can sustain STS for a number of short utterances, the child moves to simple conversation. Picture books or conversations about play activities can be used as stimulus materials. Some children may need intermediate steps such as picture description or asking questions to elicit short answers. These steps reduce the cognitive load for the child and help to concentrate on using the new STS pattern more successfully. Progression from short utterances to simple conversation may take place quite quickly (within a week) or over several weeks, depending on the child's ability to imitate and maintain use of the technique. Children with issues additional to stuttering typically take longer. No programmed instruction is used when the STS pattern is taught.

It can be useful for the clinician to make a demonstration recording of the required STS speech pattern. This reference model helps to stop the child's technique from morphing into normal speech or moving towards staccato-sounding speech.

### Home STS practice sessions

When the child and the parent demonstrate proficient use of STS with the clinician, practice sessions begin at home. The definition of a practice session is when a time is specifically set aside for the parent and child to use STS together. This may be in conversation if the child is able to do this, or, early in treatment, it might still just be in imitation or in short sentences. The goal is for the child to use STS for 5-10 minutes at a time during 4-6 practice sessions spread across the day. Practice can be done anywhere a parent and child are together and able to concentrate on the task. Examples of naturally occurring treatment situations are talking at the dinner table, reading a book, engaging in a play activity together (for example, playing with lego), preparing meals, hanging out the washing, and driving in the car. The parent also speaks in syllables during these practice times.

During practice sessions, the child should be trying to maintain STS for most of the time. Occasional gentle prompts for STS can be used if needed. If the child is unable to maintain STS in conversation, then there is a need to go back to easier practice tasks, such as imitation or short sentences, for a while, and/or slow down the rate of speech. Some children may need to rely on imitation for some time but improvement can still be made in such circumstances. Parents can encourage and reinforce child STS use with praise (Great syllables! Keep talking like that!) or a request for self-evaluation for use of STS (Was that great syllable talking?).

### Some essential things about STS practice

#### *How STS should sound*

STS is initially taught slowly, then progresses to near normal speech rate. However, children may need to drop back to a slower rate at times if they find STS difficult to maintain. When using STS, it is essential to ensure normal volume, normal pitch, and normal intonation and make sure to link the syllables together. Each syllable should be evenly stressed.

#### *Be sure parents are demonstrating and eliciting STS correctly & consistently*

Clinicians need to be sure that parents are demonstrating and eliciting STS correctly according to their instructions. At each consultation, parents demonstrate how they have been practising STS with the child during the previous week, and the clinician gives them feedback. Alternatively, parents may audio or video record examples of themselves doing STS practice sessions and play them to the clinician during the consultation. The clinician will also engage the child in an STS practice session to demonstrate treatment for the parent to watch. The order of parent or clinician demonstration is not critical, but it is determined by discussion and problem-solving and typically changes as the parent and child become more skilled with the STS speech pattern. It is not a static process but a fluid one.

#### *Practice sessions are a positive experience for the child*

Practice sessions must be a positive experience for the child. It is essential to identify when they are not a positive experience. Activities need to be varied to avoid boredom. Clinicians should also watch out for parent over-correction. STS should not be used as a correction for stuttering.

*When to reduce practice sessions*

At the beginning of treatment, the aim is to have the child practice STS 4-6 times a day for 5-10 minutes at a time. This will mostly be in natural conversations, although, for some children, imitation may be needed for a while in the initial period. Some children may also need to use, or return to, a slowed rate to be able to maintain the technique. When the SRs begin to reduce significantly and consistently, the number of practice sessions each day can be slowly reduced. At least one practice session a day should be maintained until the child moves into Stage 2. Once the child is in Stage 2, the remaining daily practice session is gradually withdrawn.

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## Prompts

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When the child can maintain STS for most of the practice session, and 4-6 practice sessions are being done each day, prompts are introduced. These are used outside of practice sessions. The parent encourages the child to use STS for a few sentences during an everyday conversation. At other times during the day, it is useful for the parent to speak using STS for a few sentences and allow the child to join in. While there is no requirement for the child to use STS at these times, they tend to use it voluntarily. It is important that the timing and frequency of prompts are discussed with the parent. Generally, no more than one per hour would be recommended, and only if the child tolerates it. Prompts for STS should *never* be used to correct or as a response to your child's stuttering.

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## Rewards

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Compliance may be an issue for some children. In such cases, it may be appropriate to reward the child specifically for compliance. Rewards are optional and individualised for each child. Sticker charts, tokens earned towards an ultimate goal, or activity-based rewards may be designed to suit the child's age and interests. Praise for the child's use of STS should occur occasionally, both within and outside of practice sessions. Compliance should not be confused with a child's inability to sustain STS use. In such cases, slowed speech rate and praise are more appropriate.

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## Treatment progression

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The parent and child initially consult with the clinician weekly, either in the clinic or by webcam. When the child can maintain STS for the 5-10 minute practice sessions and is complying with practice sessions 4-6 times a day, prompts are introduced, and consultations move to fortnightly. When Stage 1 criteria are met (see below) the child moves into Stage 2 of the program.

### **Treatment criteria for progression to Stage 2**

To progress to Stage 2, the following criteria need to be met for two consecutive fortnightly consults: (1) clinician SR of 0 or 1 during the consultation, and (2) daily parent typical SRs of 0-1 during the week preceding the consultation, with at least four of those seven SRs being 0. A minimum requirement during Stage 2 is for parents to document SRs during the week preceding the consultation. However, the clinician may request parents to document SRs more often.

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## Stage 2

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## The purpose of Stage 2

Stage 2 serves three purposes: (1) to withdraw all STS practice sessions; (2) to maintain the absence or low level of stuttering that was attained during Stage 1; and (3) to ensure parents understand how to monitor and manage any increase that may occur in their child's stuttering, reintroducing STS practice if needed.

## Systematic withdrawal of STS practice

During Stage 2, the parent slowly withdraws the last of the STS practice sessions, providing that it can be done without an increase in stuttering. The clinician makes suggestions for the speed and timing of the withdrawal of practice sessions although occasional practice sessions are typically recommended for a few months. Prompting for STS may be used intermittently, but parents should avoid prompting for STS contingent on stuttering, unless stuttering is very infrequent. Decisions about the timing and rate of withdrawal of practice sessions are based on the child's SRs and after discussion with the parent.

## Empowering the parent

Parents should be taught to problem-solve and deal with any increases in stuttering in the first instance. If stuttering increases minimally—to SRs of 1 or 2—the parent should be taught to reintroduce a practice session daily until the SRs reach criterion levels again. Parents should be encouraged to monitor for such an increase and to attempt to control it themselves before coming back to treatment consultations. In this manner, significant relapse is less likely to happen. However, if SRs increase substantially, or do not respond to reintroduction of practice sessions, parents should be encouraged to contact the clinician for advice prior to the next scheduled Stage 2 consultation.

## Performance contingent maintenance

A performance-contingent maintenance schedule applied to stuttering treatment, and its potential benefits, have been documented.<sup>7</sup> Performance-contingent maintenance means that the parent and child consult with the clinician less frequently, provided that treatment targets are maintained; for example, two consultations 4 weeks apart, then two consultations 8 weeks apart, and, finally, one or two consultations 16 weeks apart. The schedule normally takes a year or more.

## A common Stage 2 problem

When children complete Stage 1 and there is no stuttering or nearly no stuttering, parents or clinicians, or both, can become complacent and not follow through with the prescribed Stage 2 maintenance program. This creates a serious risk that relapse will occur. It is important for the clinician to ensure that parents are fully aware of the importance of a performance-contingent maintenance schedule and the risks if it is not followed.

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# WESTMEAD Program Clinical Consultations

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## Stage 1 consultations

During the first part of Stage 1 the parent and child consult with the clinician once each week. Each consultation is typically around 45 minutes. Once the STS practice is mastered, that is, the child is compliant with 4-6 practice sessions daily, consultations reduce to fortnightly. The following events normally occur during a consultation.

### (1) *Child conversation*

The parent or the clinician, or both, converse with the child until the extent of stuttering, if any, is apparent. Alternatively, the parent and clinician listen to a recording or a selection of recordings of the child conversing during everyday life.

### (2) *Check parent SR*

The clinician and parent discuss a SR using procedures outlined previously (see "Parent SR training," page 2). The clinician documents a SR. Clinicians need to be mindful that a within-clinic SR is not necessarily representative of the child's speech in his everyday activities.

*(3) Discussion of progress since last consultation*

The parent reports the child's SR scores for each day of the previous week, and the number and success of daily STS practice sessions. The clinician then uses this information to focus an in-depth discussion of severity and treatment responsiveness from the previous week. Discussion topics normally include the following:

- When practice sessions were planned, did they occur as planned? How often and for how long?
- When during the day did the practice sessions occur?
- What activity were the child and parent involved in during practice sessions?
- Was STS practised in imitation or conversational speech?
- Was the child able to sustain STS throughout the practice session?
- How much was the child speaking in STS during the practice session?
- Did the parent use prompts for STS? How often? With what result?
- Did the parent think anything did or did not work particularly well during the week?
- What was the relationship between stuttering severity and STS practice?
- Did any activities appear to trigger an increase in stuttering?
- Did the child enjoy and was the child compliant with the practice sessions?

*(4) Clinician and parent demonstrate an STS practice session*

It is important during each consultation for both the clinician and the parent to demonstrate STS practice with the child, as each serves a different purpose. The clinician demonstrates with the child in order to reinforce to the parent the correct way to do the treatment. This can reassure the less confident parent that what they are doing is correct. It can also model the best procedures for the less competent parent who is having difficulty with the structure of practice sessions. It directs the changes that need to be made. Finally, it empowers the parent with more information.

It is equally important for the parent to demonstrate how they have been conducting the practice sessions with the child at home. This may be done live during the consultation, or the parent may bring in a recording of a session done at home, or both. This enables the clinician to see how well the parent has interpreted the instruction given as well as how well the parent has been able to structure and conduct the sessions at home. This information is essential for clinicians and parents to engage in problem-solving each week.

Whether the clinician or the parent demonstrates first will depend on a number of factors, including the stage of treatment, the behaviour and cooperation of the child, the confidence of the parent, and the discussion of progress during the previous week. Regardless of the order of demonstration, the fact that both clinician and parent demonstrate also allows the child to get more practice using STS with different people.

*(5) Parent and clinician discuss issues with the conduct or scheduling of STS practice sessions*

During and subsequent to the demonstration of the STS practice sessions, the clinician and parent discuss any issues which become apparent with the scheduling, conduct, or structuring of the practice sessions. If the recommended procedures are not able to be followed, the clinician and parent discuss the reasons and solutions for this.

*(6) Planning treatment changes for the coming week.*

The parent and clinician discuss changes to procedures (for example, practice sessions or prompts) for the coming week and activities to use during practice sessions. The clinician may demonstrate to the parent any changes to treatment procedures for the coming week. The parent may also demonstrate the changed procedures if the child is compliant with this. Points 4 and 5 (above) and 6 are not prescriptive in terms of the order of the procedures, and often they will occur simultaneously. The important point is that the clinician and parent, together, discuss and problem-solve any issues to do with implementation of the STS practice sessions, prompts, or child compliance that are uncovered during the session. The clinician will use opportunities for further teaching and demonstration as required. When the SRs begin to reduce, the number of practice sessions each day will also reduce.

*(7) Concluding the consultation*

The clinician concludes the consultation by summarising the plan for the coming week. It is extremely important for the clinician to encourage the parent to raise any further matters for discussion.

## Stage 2 consultations

A typical Stage 2 consultation is 30 minutes. The initial procedures of a Stage 1 consultation, as described above, are conducted: the clinician or parent converses with the child (preferably supplemented with some home recordings), the clinician checks the parent SR, and the parent presents SRs from the previous week. The clinician and parent then discuss the extent to which the child's clinic SR and weekly SRs have been typical of all weeks since the last consultation. They then discuss progress generally since the last consultation. Topics may include, but are not limited to, (a) the stability of the stuttering reduction, (b) the duration and degree of any fluctuations, (c) the number of practice sessions or the need to reintroduce any practice sessions, (d) the use and effectiveness of prompts, and (e) any activities that prompted more stuttering. Withdrawal of practice continues as soon as possible once low SRs are maintained.

The parent continues to collect daily SRs for, at least, the week prior to each consultation. If the child meets the criterion treatment goals (see "Treatment criteria for progression to Stage 2", page 6), the clinician arranges progression to the next step in the performance contingent Stage 2 schedule. If the child does not meet those goals, progress is not recommended. Instead, depending on the child's stuttering severity, and the parent's ability to deal with stuttering fluctuations, the clinician either (1) schedules an appointment for the next week, or the week after, and makes recommendations regarding management for the child's increased stuttering; (2) schedules a return to an earlier stage of the sequence of Stage 2 clinic consultations; or, on rare occasions, (3) returns the child to Stage 1.

Stage 2 continues until the child has sustained minimal stuttering for around a year. Subsequent to the conclusion of Stage 2, parents are advised to contact the clinician if any relapse occurs that cannot be managed by short-term reintroduction of STS practice.

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## The WESTMEAD Program evidence base at August 2020

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There are currently five clinical trials involving the Westmead Program. Four of these are with preschool children.<sup>8,9,10,11</sup> There is one clinical trial with older children.<sup>12</sup>

### *Trajkovski et al., 2006<sup>8</sup>*

This was a case study involving one 3-year old child who had been stuttering for 2 years. He attended the clinic for seven visits with his mother, over a period of 20 weeks. During this time stuttering reduced to less than 1.0 %SS beyond the clinic, with parent SR report of no stuttering.

### *Trajkovski et al., 2009<sup>9</sup>*

This was a multiple baseline across participants experiment with three children aged 3 years. The children reduced their stuttering severity by 40%, 49%, and 32% after the introduction of STS practice.

### *Trajkovski et al., 2011<sup>10</sup>*

This was a nonrandomised clinical trial involving 17 preschool children aged 3–5 years. Only eight of the children completed the treatment. For these eight children there was a significant reduction of stuttering from a group mean of 6.0 %SS pre-treatment to a mean of 0.2 %SS at 12 months post-treatment, with treatment involving a mean of eight clinical hours.

### *Andrews et al., 2012<sup>11</sup>*

This was a nonrandomised trial which recruited 10 children aged 6–11 years. One child withdrew from treatment. Nine months after beginning treatment, five of the children had reduced their stuttering by more than 50%. This study prompted the introduction of parent verbal contingencies into the program, especially for older children. The new program is known as the Oakville Program.

### *Trajkovski et al., 2019<sup>11</sup>*

This was a trial with 91 preschool children aged up to 5 years 11 months. The trial was a three-arm randomised controlled trial with the Lidcombe Program as the control arm and the Westmead Program and the Oakville Program as the two experimental arms. There were blinded outcome assessments at 9 months post-randomisation. There was no difference in %SS scores between groups at 9 months post-randomisation. A major limitation of this study, however, was the large drop-out rate of around 43% for both STS treatments.



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