Global Voice Prevention and Therapy Model (GVPTM) Session 1

Goals/Targets	Method of Instruction/Ingredients	
What/In What Way	**Ingredients**	**Dosing Parameter**
Additional Methods Component of the GVPTM Goal #1: The client will increase knowledge of vocal hygiene strategies by answering 9/10 questions correctly.	**The client and clinician determine the preferred presentation of information. The options are synchronous (in real time instruction either in-person or through videoconferencing) or asynchronous (material is accessed on the client's own time through an online program). Direct Ingredients • Information: The clinician provides vocal hygiene strategies to the client. Vocal hygiene strategies include: decrease throat clearing, use of a silent cough, increase hydration, minimize potential for reflux, minimize smoking, minimize caffeine and alcohol when vocal demands increase, taking vocal naps throughout the day, consider voice amplification, possible use of cool mist humidifiers, and warm up and cool down voice exercises. The clinician reviews all the strategies with the client to determine an individualized plan. • Modality: Increasing knowledge through visual and auditory modes presented by the clinician. Visual information in pictures, power point slides, and videos. Auditory information presented verbally by the clinician and audio from videos	• The amount of information on vocal hygiene strategies is provided for 5-10 minutes. • 10 question quiz is given until the client achieves 90% accuracy. Repeated presentation of the quiz is acceptable.
Additional Methods Component of the GVPTM Goal #2: The client will describe how they will apply relevant vocal hygiene strategies in their daily environment (e.g., environment that is relevant for a professional voice user or a typical voice user).	**The client and clinician determine the preferred presentation of information. The options are synchronous (in real time instruction either in-person or through videoconferencing) or asynchronous (material is accessed on the client's own time through an online program). Direct Ingredients • Information: The client describes how they will apply relevant vocal hygiene strategies in their daily environment to the clinician. The number of relevant vocal hygiene strategies that the client will apply to their	• The description of the application of the strategies in the client's daily environment occurs for 5-10 minutes.

If a client decides that no vocal hygiene strategies will be applied to their daily environment, then the goal is not met. Not meeting this goal will not stop or delay them from continuing to Goal #3. The clinician needs to respect the autonomy of the client and adapt the plan to move on to the next goal.	daily environment is dependent upon the number that are relevant to the client. Any number is acceptable. • Modality: The description of the application of the strategies by the client to the clinician may occur verbally or in writing.	
Additional Methods Component of the GVPTM Goal #3: The client will increase knowledge about how the voice production system works by answering 9/10 questions correctly.	**The client and clinician determine the preferred presentation of information. The options are synchronous (in real time instruction either in-person or through videoconferencing) or asynchronous (material is accessed on the client's own time through an online program). Direct Ingredients • Information: The clinician provides information about Power, Source, and Filter. Information about Power includes: basic understanding of inhalation and exhalation (Boyle's Law) and what's different for speech. Information about Source includes: adduction of true vocal folds for phonation, laryngeal structures, intrinsic laryngeal muscles, suprahyoids as a group and their function, and infrahyoids as a group and their function. The client builds a paper larynx. Information about Filter includes: basic understanding of the source-filter theory, the vocal tract as the filter that modifies the sounds produced by the vocal folds. • Modality: Increasing knowledge through visual and auditory modes presented by the clinician. Visual information in pictures, power point slides, creation of a	• The amount of knowledge of how the voice production system works is provided for 10-15 minutes. • 10 question quiz is given until the client achieves 90% accuracy. Repeated presentation of the quiz is acceptable.

	paper larynx, and videos. Auditory information presented verbally by the clinician.	
Additional Methods Component of the GVPTM Goal #4: The client will increase knowledge about Estill Voice Training's (EVT) Figures and Qualities by answering 9/10 questions correctly.	**The client and clinician determine the preferred presentation of information. The options are synchronous (in real time instruction either in-person or through videoconferencing) or asynchronous (material is accessed on the client's own time through an online program). Direct Ingredients • Information: The clinician provides information about EVT's Figures and Qualities. There are 13 Figures and 6 Qualities. The Qualities are combinations of the 13 Figures. There are 13 total Figures. The 10 relevant Figures with conditions are listed below, but the clinician may decide to address more than the 10 depending upon the needs of the client. - True vocal fold (TVF) body-cover (slack, thin, thick, stiff) - TVF onset/offset (smooth, aspirate, glottal) -False vocal fold (FVF) (mid, constrict, retract) - Thyroid (vertical, tilt) - Cricoid (vertical, tilt) - Aryepiglottic sphincter (AES) (wide, narrow) - Larynx (low, mid, high) - Velum (low, mid, high) - Head/neck (relaxed, anchored) - Torso (relaxed, anchored) • There are 6 EVT Qualities. They are Speech, Sob, Oral Twang, Nasal Twang, Belt, Falsetto. • Modality: Increasing knowledge through visual and auditory modes presented by the clinician. Visual information in pictures, EVT Figures in a Flash Flashcards, EVT's Estill Exercise App, EVT Voice Print Plus software, physical gestures produced with each Figure manipulation, power point slides, videos, and anatomical models. Auditory information presented	• The amount of knowledge about EVT's Figures and Qualities is provided for 20-30 minutes. • For the opportunities to increase knowledge, the client will imitate exactly what the clinician demonstrates. The number of imitations should be at least one production per clinician model. The intent for this goal is to increase the client's knowledge about EVT's Figures and Qualities rather than focusing on developing skills and habits. • 10 question quiz is given until the client achieves 90% accuracy. Repeated presentation is acceptable.

	verbally by the clinician producing the Figures and Qualities and by listening to the EVT Voice Print Plus software. • Modality: Opportunities to increase knowledge are provided. As each Figure and Quality are reviewed, the clinician may ask the client to imitate the clinician's voice production including the appropriate physical gesture for each Figure manipulation.	

Global Voice Prevention and Therapy Model (GVPTM) Session 2

Goals/Targets	Method of Instruction/Ingredients	
What/In What Way	**Ingredients**	**Dosing Parameter**
<u>Assessment</u> Goal #5: The client will produce an open-ended speech sample in their typical speaking voice.	<u>Assessment (not part of RTSS framework)</u> • Information: Enhance the client's ability to be successful in the GVPTM through determination of the client's attractor state in their typical speaking voice in connected speech. • Modality: Enhance success through auditory modes. The clinician will ask an open-ended question (e.g., "Tell me about your voice." or "How does your voice impact your life?" "Tell me about your family." or "Tell me why you like teaching.") to elicit the client's typical speaking voice. • Method: Client and clinician work synchronously either in-person or through videoconferencing.	• The assessment occurs for 5 minutes. • The clinician will record the client's attractor state based on EVT's 13 Figures with the physiological manipulation of each Figure representing the client's typical speaking voice. This will be used as baseline for the client's *old* voice.

<u>Stimulability Component of the GVPTM</u> Goal #6: The client will improve performance of the relevant EVT Figures by imitating the clinician's model with 90% accuracy as determined by clinician auditory-perceptual judgement as either correct or incorrect imitation.	<u>Opportunities to practice EVT's Figures</u>
	• From Goal #5, the relevant Figures of the client's attractor state for connected speech have been identified.
	• The clinician will verbally model each relevant Figure that was determined in Goal #5 with all physiological conditions and corresponding physical gestures.
	• The client will verbally produce each relevant Figure with all physiological conditions and corresponding physical gestures immediately following the clinician model.
	• The most common Figures used for prevention of voice disorders include, but certainly not limited to the following:
	    - FVF (mid, constrict, retract)
	    - Thyroid (vertical, tilt)
	    - TVF body-cover (slack, thin, thick, stiff)
	    - TVF onset/offset (smooth, aspirate, glottal)
	    - Head/neck (relaxed, anchored)
	The most common Figures used for treatment of voice differences/disorders include, but certainly not limited to the following:
	    - FVF (mid, constrict, retract)
	    - Thyroid (vertical, tilt)
	    - TVF body-cover (slack, thin, thick, stiff)
		• Imitating the relevant EVT Figures with physiological conditions occurs for 10 minutes. It may be necessary to return to this goal in later sessions, if the client needs a refresher on the relevant Figures for the new voice for connected speech.
		• Number of repetitions until 90% accurate with each relevant Figure manipulation.

- TVF onset/offset (smooth, aspirate, glottal)
- AES (wide, narrow)
-Velum (low, mid, high)
- Head/neck (relaxed, anchored)
- Torso (relaxed, anchored)
- Larynx (low, mid, high)

- If the client is having problems producing certain Figures, the EVT Qualities can be used to help facilitate. For example, sob quality can be used to find the Larynx Figure in a low position. Nasal twang like teasing a child on the playground ("nah, nah, nah, nah, nah") can be used to find the AES Figure in a narrow position.
- The relevant Figures with specific physiological manipulation are combined to produce the new voice for connected speech.

Method
- Client and clinician work synchronously either in-person or through videoconferencing.

Provide feedback
- Correct production by the client: If it was produced correctly, the client will repeat the production 10 times in a row as blocked practice with feedback occurring less often (i.e., after the 10th production).
- Incorrect production by the client: If it was produced incorrectly, the clinician will provide immediate feedback on the client's production and ask the client to try again following another clinician model.

Provide volitional ingredients
- Provide instructions: For each Figure, remind the client of the anatomy and physiology. Show the paper larynx and/or an anatomical model of the voice production system. Use the physical gesture for each Figure manipulation when demonstrating.
- Provide cues: Physical gesture for each relevant Figure manipulation are provided by the clinician and/or client.

- Correct Production: Feedback less often (e.g., after 10th trial)

- Incorrect Production: Feedback offered immediately after the trial

- Instructions: As needed, until client produces correct voicing pattern.

- Cues: As needed, until client produces correct voicing pattern.

	• Provide rationale for ingredients and target.	• Rationale: Once
Treatment Hierarchy Component of the GVPTM Goal #7: The client will increase production of the new voice for connected speech in facilitator syllable/word, words, functional phrases, sentences, memorized speech acts, specific spontaneous speech acts, monologue, and conversation with 90% accuracy as determined by clinician and client judgement.	Opportunities to practice the new voice for connected speech • The new voice is a combination of the relevant Figures with specific physical manipulation as identified in Goal #6. • Client will produce the *new* voice at hierarchical levels of speech production. These levels are presented as follows: Facilitator syllable/word (e.g., quack, beep-beep, oh-you) Words (e.g, hello, days of the week/months of the year) Functional phrases (e.g., Good morning, How are you?) Sentences (e.g., It is time to practice our math skills.) Memorized speech acts (e.g., Pledge of Allegiance, song lyrics spoken not sung, nursery rhymes) Specific spontaneous speech acts (e.g., recipe, describe the outside of your house) Monologue (e.g., talk about what happened last weekend) Conversation (e.g., between client and clinician) • The clinician may need to verbally model the new voice at each step of the hierarchy. • The client will verbally produce the new voice at each step of the hierarchy following the clinician model. • The clinician may provide the relevant physical gestures representing each Figure manipulation and ask the client to produce the physical gesture while speaking in the new voice. • The clinician may provide the physical gesture while the client is talking to remind the client of what Figures with manipulations are necessary for the new voice. • Once the client has mastered using the *new* voice at a step in the treatment hierarchy, then the client must revert back to the *old* voice at that same level. Both *new* and *old* voice will be practiced at that level (refer to Goal #8). Method • Client and clinician work synchronously either in-person or through videoconferencing.	• Using the new voice in the treatment hierarchy is 15-20 minutes. • Number of repetitions until 90% using the new voice at each step of the hierarchy. • Once new voice is achieved at a specific step of the hierarchy, then Goal #8 is introduced at that step in the hierarchy at 90% accuracy. Goal #7 and Goal #8 are alternating as the client moves up each step of the treatment hierarchy. For example, new voice at word level achieved at 90% accuracy (Goal #7), now ready to address new and old voice at word level to achieve 90% accuracy (Goal #8). Then move up to functional phrases new voice at 90% accuracy (Goal #7), ready to move to new versus old voice at functional phrases with 90% accuracy (Goal #8).

	Provide feedback • Correct production by the client: If it was produced correctly, the client will either repeat productions 10 times in a row (e.g., Good morning, Good morning, Good morning, etc. until the 10th one) or produce 10 unique 2-3 word functional phrases (e.g., Good morning, Hello, How are you, Happy Birthday, etc. until the 10th one) as blocked practice with feedback occurring less often (i.e., after the 10th production). Blocked practice schedule to acquire the correct skill with limited feedback. • Incorrect production by the client: If it was produced incorrectly, the clinician will provide immediate feedback on the client's production and ask the client to try again following another clinician model. • Ask the client if he or she feels or hears a difference in their new voice compared to their old voice to implement self-monitoring. • The client may be recorded during the session to offer an opportunity to listen to the new voice and discuss as a client-clinician pair how successful the client was in producing the new voice. A percentage scale can be used. "How often were you using your new voice? 90% of the time? 50% of the time?" Provide volitional ingredients • Provide instructions: Remind the client of the relevant Figures with specific physiological manipulations that are required to produce the new voice. Show the paper larynx and/or an anatomical model of the voice production system. • Provide cues: Clinician and client will produce the physical gesture for the relevant Figure manipulations when describing the new voice and when using the new voice. • Provide rationale for ingredients and target.	• Correct Production: Feedback less often (e.g., after 10th trial) • Incorrect Production: Feedback offered immediately after the trial • Instructions: As needed, until client produces correct voicing pattern. • Cues: As needed, until client produces correct voicing pattern. • Rationale: Once
New versus Other/Old Component of the GVPTM Goal #8: The client will improve performance of the new and old voice in connected speech in	Opportunities to practice the client's new and old voice for connected speech • The new voice is a combination of the relevant Figures with specific physical manipulation as identified in Goal #5. • The old voice is the typical speaking voice that the client used before beginning voice training as identified in Goal #5.	• Producing new versus other/old voices across the treatment hierarchy is 15-20 minutes. • Number of repetitions until 90% using the new and other/old voice at each step of the hierarchy.

| facilitator syllable/word, words, functional phrases, sentences, and memorized speech acts, specific spontaneous speech acts, monologue, and conversation with 90% accuracy as determined by clinician and client judgement. | • Client will produce the *new* and *old* voice at hierarchical levels of speech production. These levels are presented as follows: Facilitator syllable/word (e.g., quack, beep-beep, oh-you) Words (e.g, hello, days of the week/months of the year) Functional phrases (e.g., Good morning, How are you?) Sentences (e.g., It is time to practice our math skills.) Memorized speech acts (e.g., Pledge of Allegiance, song lyrics spoken not sung, nursery rhymes) Specific spontaneous speech acts (e.g., recipe, describe the outside of your house) Monologue (e.g., talk about what happened last weekend) Conversation (e.g., between client and clinician)
• The clinician may need to verbally model the new voice at each step of the hierarchy.
• Either independently or following a clinician model, the client will verbally produce the new voice at each step of the hierarchy.
• The clinician may provide the physical gesture and ask the client to produce the physical gesture while speaking in the new voice.
• The clinician may need to help the client find the old voice by reminding them what it felt and sounded like according to the 13 EVT Figures. It may help to produce an exaggerated version of the old voice, so that the client is able to clearly hear and the feel the differences between the new and old voices.
• Facilitation of this goal typically begins with the clinician telling the client to switch in and out of new vs. old voice. For example, "Say this sentence in your new voice, now say it in your old voice. Start by saying the Pledge of Allegiance in your new voice and then I will ask you to switch to your old voice halfway through."
• After the clinician controls new vs. old voice, then the client will control when they switch. For example, "You produce the following 10 sentences, but this time you decide what voice to use and I have to guess." "You say the Pledge of Allegiance, but this time you decide when to switch between new and old voice and I have to guess."
• Ask the client if they feel or hear a difference in their new voice compared to their old voice to implement self-monitoring. | • Once the new voice is achieved at a specific step, then Goal #8 is introduced at that step in the hierarchy. Then, Goal #7 occurs again at the next step up in the treatment hierarchy achieving 90% accuracy. Followed by Goal #8 again at the new step achieving 90% accuracy. Goal #7 and Goal #8 are alternating as the client moves up each step of the treatment hierarchy. |

	- The client may be recorded during the session to offer an opportunity to listen to the new and old voice and discuss as a client-clinician pair the differences between the two voices. - Alternating Goal #7 and Goal #8 occurs as described in dosing. - Involve other people with consent from the client (i.e., caregivers, significant others, friends, other clinicians) to help guess if the new voice or old voice is being used. Method - Client and clinician work synchronously either in-person or through videoconferencing. Provide feedback - The new versus old voice productions at each step of the hierarchy is an example of a random practice schedule to increase learning and generalization. Feedback from the clinician may be provided more often than in the blocked practice mentioned in Goal #7. Perhaps after every 3rd or 4th production. Feedback should occur in this format, "What did you think about that?" "Were you really in your new voice?" "Were you really in your old voice?" "Let's talk about what we hear and feel in the new voice." "What do we hear and feel in the old voice?" If the productions were recorded, then the clinician can say "Let's go back and listen to the recording and see what we think." Provide volitional ingredients - Provide instructions: Remind the client of the relevant Figures with specific physiological manipulations that are required to produce the new voice. Also, remind them of the relevant Figures with specific physiological manipulations that are apparent when producing the old voice. Show the paper larynx and/or an anatomical model of the voice production system. - Provide cues: Clinician and client will produce the physical gesture for the relevant Figure manipulations when describing the new and old voice and when using the new and old voice. - Provide rationale for ingredients and target.	- Feedback more often (e.g., after every 3rd or 4th trial) - Instructions: As needed, until client produces correct voicing pattern. - Cues: As needed, until client produces correct voicing pattern. - Rationale: Once

Additional Methods of the GVPTM Goal #9 <mark>(optional):</mark> The caregiver, *e*helper, teacher, friend, family, and/or significant other will increase knowledge about the client's new and old voice for connected speech with 90% accuracy.	Direct Ingredients • Information: Enhance the client's ability to be successful in the GVPTM through education and training of communication partners. • Modality: Enhance success through explanation and demonstration. (a) The clinician should ask the client to explain to the person the overall goals for voice therapy. The clinician can assist the client with providing the information. (b) The clinician should have the client describe and demonstrate the new and old voice. (c) The client should produce examples of the two voices in various levels of the hierarchy. Once the person hears the difference, then the client will produce the two different voices at a step of the hierarchy and the person will guess what voice was produced. • Method: Client and clinician work synchronously either in-person or through videoconferencing.	• Encourage the client's caregiver, friend, family member, and/or significant other to attend the last 5-10 minutes of the session with the client's permission.
Home Practice Goal #10 The client will complete home practice program as directed.	Direct Ingredients • Information: Enhance the client's ability to be successful in the GVPTM with daily practice • Modality: Enhance success through practice. (a) First, the client will practice vocal warm ups. Those warm ups will be directly related to finding the new voice. For example, the client will produce "oh-you" 10 times in a row or the client will produce "beep-beep" 10 times in a row. The "oh-you" facilitates retracted FVF, smooth TVF onset/offset, thyroid tilt, and avoidance of slack TVF body-cover. The "beep-beep" facilitates AES narrow. (b) Following the vocal warm ups, the client will produce 5 functional phrases, one memorized speech act (e.g., the Pledge of Allegiance), and one specific spontaneous speech act (e.g., describe the inside of your apartment/house) in their new voice. (c) Following the vocal warm ups and the new voice work, the client will produce 5 functional phrases alternating between new and old voice, one memorized speech act (e.g., the Pledge of Allegiance) switching between new and old voice, and one specific spontaneous speech act (e.g., describe the inside of your apartment/house) switching between new and old voice.	• Client will practice three times a day, once in the morning, once at lunch time, and once in the evening until the client and the clinician meet again for the third session, one week later. Each practice session should last 5 minutes.

Global Voice Prevention and Therapy Model (GVPTM) Session 3

Goals/Targets	Method of Instruction/Ingredients	
What/In What Way	**Ingredients**	**Dosing Parameter**
<u>Assessment</u> Goal #11: The client will produce an open-ended speech sample in the new and old voice.	<u>Assessment</u> (not part of RTSS framework) • Information: Enhance the client's ability to be successful in the GVPTM through carry-over and maintenance of production of the new and old voice for connected speech. • Modality: Enhance success through auditory modes. The clinician will ask "How was your weekend?" Then the clinician will ask, "How was it using your new voice during the past week?" -Rationale: The first question provides a prompted speech sample, so that the clinician can assess any carry over of the new voice. The second question indirectly cues the client to use the new voice, if the client has not. - If the client is using the new voice with no problem, then move on to the other tasks described below in this goal/target. -If the client is having trouble producing the new voice, then help the client find it again. Remind the client of the relevant EVT Figures with the gesture.The clinician may have to provide a model. The clinician may have to train the individual Figures again. The clinician may have to work back through the treatment hierarchy to find the level that the client is able to produce the new voice and then work up the hierarchy from that level all the way to conversation. Please see the method of instruction/ingredients from Session 2 for guidance. • Modality: Enhance success through self-monitoring. At the end of the production, the client and clinician will discuss the outcome. The clinician can ask, "How successful were you maintaining your new voice? Did you maintain it 90% of the time? 50% of the time?" • Modality: Enhance success through auditory modes. The clinician will ask the client, "Tell me what you did yesterday in your old voice." -Rationale: The clinician can assess whether the client can produce the old voice or not. If the client is having trouble finding the old voice. The clinician can help the client find the old voice by providing a model and by reviewing the relevant Figures with gestures. The clinician may have to work back	• The assessment occurs for 5-15 minutes. • Accuracy of the new and old voice is based on auditory-perceptual judgement of the clinician and client.

	through the treatment hierarchy to find the level where the client can produce the old voice and then work back up through the hierarchy. Please see the method of instruction/ingredients from Session 2 for guidance. • Method: Client and clinician work synchronously either in-person or through videoconferencing.	

<u>Treatment Hierarchy Component of the GVPTM</u> Goal #12: The client will increase production of the new voice for connected speech, quiet talking, and talking over noise in facilitator syllable/word, words, functional phrases, sentences, memorized speech acts, specific spontaneous speech acts, monologue, and conversation with 90% accuracy as determined by clinician and client judgement.
 	
EVT Qualities:
Falsetto for quiet talking
Oral twang for talking over noise
	<u>Opportunities to practice the client's new voice for connected speech, quiet talking, and talking over noise.</u>
	• Depending upon the results of Goal #11, the work related to connected speech may be less than quiet talking (falsetto) and talking over noise (oral twang). For example, if the client generalized the new voice to monologue or conversation, then work with the lower steps in the hierarchy will not be necessary. If the client maintained the new voice to memorized speech acts, then the clinician can begin at specific spontaneous speech acts.
	• The order of the voice work for Goal #12 should be connected speech, falsetto, and oral twang.
	• Client will produce the *new* voice at hierarchical levels of speech production. These levels are presented as follows:
	    Facilitator syllable/word (e.g., quack, beep-beep, oh-you)
	    Words (e.g, hello, days of the week/months of the year)
	    Functional phrases (e.g., Good morning, How are you?)
	    Sentences (e.g., It is time to practice our math skills.)
	    Memorized speech acts (e.g., Pledge of Allegiance, song lyrics spoken not sung, nursery rhymes)
	    Specific spontaneous speech acts (e.g., recipe, describe the outside of your house)
	    Monologue (e.g., talk about what happened last weekend)
	    Conversation (e.g., between client and clinician)
	• The clinician may need to verbally model the new voice at each step of the hierarchy.
	• The client will verbally produce the new voice at each step of the hierarchy following the clinician model.
	• The clinician may provide the physical gesture and ask the client to produce the physical gesture while speaking in the new voice.
	• For quiet talking, EVT's Quality of falsetto is used with some potential adjustments. Larynx height is mid and TVF body-cover (thin or stiff)
		• The new voice work occurs for 15-20 minutes.
		• Number of repetitions until 90% using the new voice for connected speech, quiet talking, and talking over noise at each step of the hierarchy.
		• Once new voice is achieved at a specific step of the hierarchy, then Goal #13 is introduced at that step in the hierarchy at 90% accuracy. Goal #12 and Goal #13 are alternating as the client moves up each step of the treatment hierarchy. For example, new voice at word level achieved at 90% accuracy (Goal #12), now ready to address new and other voices at word level to achieve 90% accuracy (Goal #13). Then move up to functional phrases new voice at 90% accuracy (Goal #12), ready to move to new versus other voices at functional phrases with 90% accuracy (Goal #13).

depending upon preference of client. A typical instruction given to the client is "Think of quiet talking (aka falsetto) as your new voice for connected speech just quieter with thin or stiff TVF body-cover."

- The hierarchy described above will be used for quiet talking (falsetto). The client will probably advance through the hierarchy at a faster pace because the voice is similar to the new voice for connected speech just with thin or stiff TVF body-cover.
- For talking over noise, EVT's Quality of oral twang is used with some potential adjustments. AES is narrow and TVF body-cover could be thin or thick. The facilitation of AES narrow is key. In some cases, the clinician may need to facilitate nasal twang first to help the client find AES narrow. Clinician can say "pretend like you are teasing a child on the playground and say nah, nah, nah, nah, nah, nah." After the AES narrow is achieved, then the clinician can work on raising the velum. Other facilitator phrases that work for oral twang are "beep-beep, I'm talking like a robot" or "meep-meep like road runner" or "quack" like a duck. All done on one pitch (i.e., monotone). As the client is able to generalize the AES narrow outside of facilitator syllables/words, words, and short phrases, then the clinician can work on pitch variability.
- The hierarchy described above will be used for talking over noise (oral twang).
- Once the client has mastered using the *new* voice at a step in the treatment hierarchy, then the client must revert back to the *other* voices at that same level. Both *new* and *other* voices will be practiced at that level (refer to Goal #13).

Method
- Client and clinician work synchronously either in-person or through videoconferencing.

Provide feedback
- Correct production by the client: If it was produced correctly, the client will either repeat productions 10 times in a row (e.g., Good morning, Good morning, Good morning, etc. until the 10th one) or produce 10 unique 2-3 word functional phrases (e.g., Good morning, Hello, How are you, Happy Birthday, etc. until the 10th one) as blocked practice with

- Correct Production: Feedback less often (e.g., after 10th trial)

	feedback occurring less often (i.e., after the 10th production). Blocked practice schedule to acquire the correct skill with limited feedback. • Incorrect production by the client: If it was produced incorrectly, the clinician will provide immediate feedback on the client's production and ask the client to try again following another clinician model. • Ask the client if they feel or hear a difference in all the voices to implement self-monitoring. • The client may be recorded during the session to offer an opportunity to listen to the new voice and discuss as a client-clinician pair how successful the client was in producing the new voice. A percentage scale can be used. "How often were you using your new voice? 90% of the time? 50% of the time?" <u>Provide volitional ingredients</u> • Provide instructions: Remind the client of the relevant Figures with specific physiological manipulations that are required to produce the new voices. Show the paper larynx and/or an anatomical model of the voice production system. • Provide cues: Clinician and client will produce the physical gesture for the relevant Figure manipulations when describing and using the new voices. • Provide rationale for ingredients and target.	• Incorrect Production: Feedback offered immediately after the trial • Instructions: As needed, until client produces correct voicing pattern. • Cues: As needed, until client produces correct voicing pattern. • Rationale: Once
<u>New versus Other/Old Component of the GVPTM</u> Goal #13: The client will improve performance of the new and other voices for connected speech, quiet talking, and talking over noise in facilitator syllables/words, words, functional phrases, sentences, and memorized speech acts, specific spontaneous speech acts, monologue, and	<u>Opportunities to practice the client's new and other voices</u> • The order of the voice work for Goal #13 should be connected speech, falsetto, and oral twang. • Client will produce the *new* and *other/old* voices at hierarchical levels of speech production. These levels are presented as follows: Facilitator syllable/word (e.g., quack, beep-beep, oh-you) Words (e.g, hello, days of the week/months of the year) Functional phrases (e.g., Good morning, How are you?) Sentences (e.g., It is time to practice our math skills.) Memorized speech acts (e.g., Pledge of Allegiance, song lyrics spoken not sung, nursery rhymes) Specific spontaneous speech acts (e.g., recipe, describe the outside of your house) Monologue (e.g., talk about what happened last weekend) Conversation (e.g., between client and clinician)	• The new versus other/old voice work occurs for 15-20 minutes. • New voice must be achieved at each step of the treatment hierarchy with 90% accuracy. Once new voice is achieved at a specific step, then Goal #13 is introduced at that step in the hierarchy. Then, Goal #12 occurs again at the next step up in the treatment hierarchy achieving 90% accuracy. Followed by Goal #13 again at the new step. Goal #12 and Goal #13 are alternating

conversation with 90% accuracy as determined by clinician and client judgement. The new voices are: new voice for connected speech, falsetto, and oral twang. The other voices are: unhealthy quiet talking voice and unhealthy talking over noise voice. The old voice is the old voice for connected speech.	• The clinician may need to verbally model the new voice at each step of the hierarchy. • The client will verbally produce the new voice at each step of the hierarchy following the clinician model. • The clinician may provide the physical gesture and ask the client to produce the physical gesture while speaking in the new voice. • The clinician may have to help the client find the old voice for connected speech by reminding them what it felt and sounded like according to the 13 Figures. For unhealthy falsetto, it should be facilitated with constricted FVF. For unhealthy oral twang, it should be facilitated with constricted FVF, thick TVF body-cover, and wide AES. The number of productions of the unhealthy examples should be minimal, only 1 or 2 productions at each step of hierarchy per voice quality. After the brief work on new versus unhealthy, then the clinician should transition to contrasting all the voices, (e.g., new and old voice for connected speech, falsetto, and oral twang) at each level of the hierarchy. • Facilitation of Goal #13 typically begins with the clinician telling the client to switch in and out of new vs. old voice for connected speech. For example, "Say this sentence in your new voice, now say it in your old voice. Start by saying the Pledge of Allegiance in your new voice and then I will ask you to switch to your old voice halfway through." The clinician will then have the client switch between all the voices. "Say this phrase in falsetto, then say it again in your new voice for connected speech, then say it in oral twang, then switch to your old voice for connected speech." • After the clinician controls new vs. other voices, then the client will control when he/she switches. For example, "You produce the following 10 sentences, but this time you decide what voice to use and I have to guess." "You say the Pledge of Allegiance, but this time you decide when to switch between all four voices and I have to guess." "Tell me about your family and switch between all the voices (i.e., falsetto, new voice for connected speech, old voice for connected speech, and oral twang). • Once the client has mastered using the *new* voice at a step in the treatment hierarchy, then the client must produce the *other* voices at that same level. Both *new* and *other/old* voices will be practiced at that level.	as the client moves up each step of the treatment hierarchy.

	Method • Client and clinician work synchronously either in-person or through videoconferencing. Provide feedback • The new versus other/old voice productions at each step of the hierarchy is an example of a random practice schedule to increase learning and generalization. Feedback from the clinician may be provided more often than in the blocked practice schedules. Perhaps after every 3rd or 4th production. Feedback should occur in this format, "What did you think about that?" "Were you really in your new voice?" "Were you really in oral twang?" "Let's talk about what we hear and feel in the new voice." "What do we hear and feel in falsetto?" If the productions were recorded, then the clinician can say "Let's go back and listen to the recording and see what we think." • Ask the client if he/she/they feel or hear a difference in their new voice compared to their other voices to implement self-monitoring. • The client may be recorded during the session to offer an opportunity to listen to the new voice and discuss as a client-clinician pair how successful the client was in producing all the voices. A percentage scale can be used. "How successful were you in producing clear differences between all of the voices? 90% of the time? 50% of the time?" Provide volitional ingredients • Provide instructions: Remind the client of the relevant Figures with specific physiological manipulations that are required to produce the new voice. Also, remind them of the relevant Figures with specific physiological manipulations that are apparent when producing the other voices. Show the paper larynx and/or an anatomical model of the voice production system. • Provide cues: Clinician and client will produce the physical gesture for the relevant Figure manipulations when describing and using the new and other/old voices. • Provide rationale for ingredients and target.	• Feedback more often (e.g., after every 3rd or 4th trial) • Instructions: As needed, until client produces correct voicing pattern. • Cues: As needed, until client produces correct voicing pattern. • Rationale: Once
<u>Additional Methods of the GVPTM Goal #14</u> <mark>(optional):</mark> The caregiver, *e*helper, teacher, friend,	Direct Ingredients • Information: Enhance the client's ability to be successful in the GVPTM through education and training of communication partners.	• Encourage the client's caregiver, friend, family member, and/or significant other to attend the last

family, and/or significant other will participate in education and training.	• Modality: Enhance success through explanation and demonstration. (a) The clinician should have the client describe and demonstrate the new and old voice for connected speech, falsetto, and oral twang to the person. (b) The client should produce examples of the voices in various levels of the hierarchy. Once the person hears the difference, then the client will produce the different voices at a step of the hierarchy and the person will have to guess what voice was produced. • Method: Client and clinician work synchronously either in-person or through videoconferencing.	5-10 minutes of the session with the client's permission.
Home Practice Goal #15 The client will complete home practice program as directed.	• Information: Enhance the client's ability to be successful in the GVPTM with daily practice • Modality: Enhance success through practice: (a) The client may continue to practice the vocal warm ups that were determined during Session 2. (b) After the vocal warm up, the client will practice the new voice for 1) connected speech in opened ended monologues (talking about family. vacations, holidays), 2) quiet talking (falsetto) in specific spontaneous speech acts (describing the steps for getting ready in the morning), and 3) talking over noise (oral twang) in specific spontaneous speech acts (describing the outside of your house or apartment). If the client did not achieve the specific spontaneous speech acts level with oral twang, then have them practice the level that they achieved. (c) The client will produce one memorized speech act (e.g., the Pledge of Allegiance) switching between new and old voice for connected speech and one specific spontaneous speech act (e.g., describe the inside of your apartment/house) switching between new voice for connected speech, quiet talking (falsetto), and talking over noise (oral twang). • Preparation work for Session 4: Have the client determine the vocal loading tasks for Session 4. For teachers, it may be a lesson plan that the client delivers to the clinician. For lawyers, it may be a closing argument. For news reporters, it may be part of the news broadcast. For public speakers, it may be a speech. The client will come to Session 4 with the vocal loading task(s). • If using telepractice, facilitating the vocal loading task in the client's environment would be ideal.	• Client will practice three times a day, once in the morning, once at lunch time, and once in the evening until the client and the clinician meet again for the fourth session, one week later. Each practice session should last 5 minutes.

Global Voice Prevention and Therapy Model (GVPTM) Session 4

Goals/Targets	Method of Instruction/Ingredients	
What/In What Way	**Ingredients**	**Dosing Parameter**
<u>Assessment</u> Goal #16: The client will produce an open-ended speech sample in the new and old voice for connected speech, quiet talking (falsetto), and talking over noise (oral twang).	<u>Assessment (not part of RTSS framework)</u> • Information: Enhance the client's ability to be successful in the GVPTM through carry-over and maintenance of production of the new and old voice for connected speech, quiet talking, and talking over noise. • Modality: Enhance success through auditory modes. The clinician will ask the client, "How was your weekend?" Then ask, "How was it using your new voice for connected speech during the past week?" -Rationale: The first question provides a prompted speech sample, so that the clinician can assess any carry over of the new voice. The second question indirectly cues the client to use the new voice, if the client has not. - If the client is using the new voice with no problem, then move on to the work related to the other voices described below in this goal/target. -If the client is having trouble producing the new voice, then help the client find it again. Remind the client of the relevant EVT Figures with the gesture. The clinician may have to provide a model. The clinician may have to train the individual Figures again. The clinician may have to work back through the treatment hierarchy to find the level that the client is able to produce the new voice and then work up the hierarchy from that level all the way to conversation. Please see the method of instruction/ingredients from Session 2 for guidance. • Modality: Enhance success through self-monitoring. At the end of the production, the client and clinician will discuss the outcome. The clinician can ask, "How successful were you maintaining your new voice? Did you maintain it 90% of the time? 50% of the time?" • Modality: Enhance success through auditory modes. The clinician will ask the client, "Tell me what you did yesterday. First, I will ask you to start in your old voice for connected speech, then I will ask you to switch to the other voices, falsetto, oral twang, and new voice for connected speech."	• Assessment occurs for 5-15 minutes. • Accuracy is based on auditory-perceptual judgement of the clinician and client.

	-Rationale: The clinician can assess whether the client can produce the other voices. -If the client is having trouble, then the clinician can help the client find the other voices by providing a model and by reviewing the relevant Figures with gestures. The clinician may have to work back through the treatment hierarchy to find the level where the client can produce the other voices and then work back up through the hierarchy. In addition, if the client did not reach monologue level with oral twang from the last session, then the clinician will have to assess the level achieved from the last session. Please see the method of instruction/ingredients from Session 2 for guidance. • Modality: Enhance success through self-monitoring. At the end of the production, the client and clinician will discuss the outcome. The clinician can ask, "How successful were you in switching between all of the voices? 90% 50%? Was their one voice that presented a problem?" • Method: Client and clinician work synchronously either in-person or through videoconferencing.	

<u>Treatment Hierarchy Component of the GVPTM</u> Goal #17: The client will increase production of the new voice for healthy yelling (belt) in facilitator syllables/words, words, phrases, and sentences with 90% accuracy as determined by clinician and client judgement.	<u>Opportunities to practice the new voice for healthy yelling (belt)</u>
	• The clinician will teach the client to yell in a healthy way by producing EVT's belt Quality. The most relevant figures for belt include:
	    TVF body-cover (thick)
	    AES (narrow)
	    Cricoid (tilt)
	    Head/Neck (anchor)
	    Torso (anchor)
	The facilitator phrase is "ay, Anthony"
	• Once the client finds belt, then the clinician will facilitate belt in words, phrases, and sentences. The phrases need to be things that the client says for healthy yelling tasks. For example, "One, two, three, eyes on me." "Put your instruments down and listen." "No running." "Walking feet." It is not necessary to require belting for longer utterances like monologue or conversation. The clinician may decide to use memorized speech acts.
	• The clinician may need to verbally model the new voice at each step of the hierarchy.
		• The new voice for belt occurs for 5-10 minutes.
		• Number of repetitions until 90% using the new voice for healthy yelling at each step of the hierarchy indicated in the goal.
		• Once new voice is achieved at a specific step of the hierarchy, then Goal #18 is introduced at that step in the hierarchy at 90% accuracy. Goal #17 and Goal #18 are alternating as the client moves up each step of the treatment hierarchy. For example, new voice at word level achieved at 90% accuracy (Goal #17), now ready to address new and other voice at word level to achieve 90% accuracy (Goal #18). Then move up to functional phrases new voice at 90%

• The client will verbally produce the new voice at each step of the hierarchy following the clinician model. • The clinician may provide the physical gesture and ask the client to produce the physical gesture while speaking in the new voice. <u>Method</u> • Client and clinician work synchronously either in-person or through videoconferencing. <u>Provide feedback</u> • Correct production by the client: If it was produced correctly, the client will either repeat productions 10 times in a row (e.g., Good morning, Good morning, Good morning, etc. until the 10th one) or produce 10 unique 2-3 word functional phrases (e.g., Good morning, Hello, How are you, Happy Birthday, etc. until the 10th one) as blocked practice with feedback occurring less often (i.e., after the 10th production). Blocked practice schedule to acquire the correct skill with limited feedback. • Incorrect production by the client: If it was produced incorrectly, the clinician will provide immediate feedback on the client's production and ask the client to try again following another clinician model. • Ask the client if they feel or hear a difference in their new voice compared to the other voices to implement self-monitoring. • The client may be recorded during the session to offer an opportunity to listen to the new voice and discuss as a client-clinician pair how successful the client was in producing the new voice. A percentage scale can be used. "How often were you using your new voice? 90% of the time? 50% of the time?" <u>Provide volitional ingredients</u> • Provide instructions: Remind the client of the relevant Figures with specific physiological manipulations that are required to produce the new voices. Show the paper larynx and/or an anatomical model of the voice production system. • Provide cues: Clinician and client will produce the physical gesture for the relevant Figure manipulations when describing the new belt voice and when using the new voice. • Provide rationale for ingredients and target.	accuracy (Goal #17), ready to move to new versus other voice at functional phrases with 90% accuracy (Goal #18). • Correct Production: Feedback less often (e.g., after 10th trial) • Incorrect Production: Feedback offered immediately after the trial • Instructions: As needed, until client produces correct voicing pattern. • Cues: As needed, until client produces correct voicing pattern. • Rationale: Once

New versus Other/Old Component of the GVPTM Goal #18: The client will improve performance of belt and oral twang in facilitator syllables/words, words, phrases, and sentences with 90% accuracy as determined by clinician and client judgement.	Opportunities to practice the client's new and other voices • The client will produce both belt and oral twang across facilitator syllables/words, words, phrases, and sentences to compare the two voices. • The clinician may need to verbally model the new voice at each step of the hierarchy. • The client will verbally produce the new voice at each step of the hierarchy following the clinician model. • The clinician may provide the physical gesture and ask the client to produce the physical gesture while speaking in the new voice. • Facilitation of Goal #18 typically begins with the clinician telling the client to switch between the two voices. For example, "Say this sentence in belt, now say it in oral twang." • After the clinician controls the switch, then the client will control when they switch. For example, "You produce the following 10 sentences, but this time you decide what voice to use and I have to guess." • When the client has mastered oral twang, then the clinician may consider playing "party noise" to have the client use oral twang over the noise. Here's a free youtube link https://www.youtube.com/watch?v=ttgBegSSyTs • While the party noise is playing, the client will switch between oral twang and belt to compare the two voice options. The clinician may also consider adding new voice for connected speech to demonstrate to the client that oral twang and belt are more efficient productions to cut through the noise. Method • Client and clinician work synchronously either in-person or through videoconferencing. Provide feedback • The new versus other voice productions at each step of the hierarchy is an example of a random practice schedule to increase learning and generalization. Feedback from the clinician may be provided more often than in the blocked practice schedule. Perhaps after every 3rd or 4th production. Feedback should occur in this format, "What did you	• The work on new versus other voice work occurs for 5-10 minutes. • New voice must be achieved at each step of the treatment hierarchy with 90% accuracy. Once new voice is achieved at a specific step, then Goal #18 is introduced at that step in the hierarchy to achieve 90% accuracy. Then, Goal #17 occurs again at the next step up in the treatment hierarchy achieving 90% accuracy. Followed by Goal #18 again at the new step at 90% accuracy. Goal #17 and Goal #18 are alternating as the client moves up each step of the treatment hierarchy. • Feedback more often (e.g., after every 3rd or 4th trial)

	think about that?" "Were you really in oral twang?" "Were you really in belt?" "Let's talk about what we hear and feel between the two voices." "What do we hear and feel in belt?" If the productions were recorded, then the clinician can say "Let's go back and listen to the recording and see what we think." Provide volitional ingredients • Provide instructions: Remind the client of the relevant Figures with specific physiological manipulations that are required to produce the new voices. Show the paper larynx and/or an anatomical model of the voice production system. • Provide cues: Clinician and client will produce the physical gesture for the relevant Figure manipulations when describing and using belt and oral twang. • Provide rationale for ingredients and target.	• Instructions: As needed, until client produces correct voicing pattern. • Cues: As needed, until client produces correct voicing pattern. • Rationale: Once
Additional Methods Component of the GVPTM Goal #19: The client will improve performance of all the voices (i.e., new and old voice for connected speech, falsetto, oral twang, and belt) during vocal loading experiences linked to the client's professional requirements (e.g., teaching) with 90% accuracy as determined by clinician and client judgement.	Opportunities to practice all of client's voices • The clinician may review each voice: new and old voice for connected speech, falsetto for quiet talking, oral twang for talking over noise, and belt for healthy yelling. • The clinician may provide a model and the client may imitate or the client may just produce examples when directed by the clinician. The clinician may use the monologue level and conversation level to review all the voices except belt. Belt review can occur in phrase or sentences. The physical gestures can be used when producing the different voices. • After the review, the client will tell the clinician about the vocal loading task. If facilitating through telepractice videoconferencing, then use the client's environment for the task. If in-person, then move to a room that mimics the environment as much as possible. • The client will begin producing the vocal loading task. Initially, the clinician will tell the client to switch between the various voices (new and old voice for connected speech, falsetto, and oral twang with some belt thrown in to get someone's attention on a phrase). If in-person, the clinician can hold up a sign to indicate the switch. If using videoconferencing, then the clinician will chat to switch the voices. • The next step would be to have the client decide when the switch will occur and the clinician will guess by holding up a sign if in-person or by using the chat function if in videoconferencing.	• The work with all the voices occurs for 15-20 minutes. • Number of repetitions until 90% using all the voices in the vocal loading experiences.

	Method • Client and clinician work synchronously either in-person or through videoconferencing. Provide feedback • The new versus other voice productions at each step of the hierarchy is an example of a random practice schedule to increase learning and generalization. Feedback from the clinician may be provided more often than in the above blocked practice schedules. Perhaps after every 3rd or 4th production. Feedback should occur in this format, "What did you think about that?" "Were you really in your new voice for connected speech?" Were you really in oral twang?" "Were you really in falsetto?" "Were you really in belt?" "Let's talk about what we hear and feel between the voices." "What do we hear and feel between oral twang and the new voice for connected speech?" If the productions were recorded, then the clinician can say "Let's go back and listen to the recording and see what we think."	• Feedback more often (e.g., after every 3rd or 4th trial)
	Provide volitional ingredients • Provide instructions: Remind the client of the relevant Figures with specific physiological manipulations that are required to produce the new voices. Show the paper larynx and/or an anatomical model of the voice production system. • Provide cues: Clinician and client will produce the physical gesture for the relevant Figure manipulations when describing and using the voices. • Provide rationale for ingredients and target.	• Instructions: As needed, until client produces correct voicing pattern. • Cues: As needed, until client produces correct voicing pattern. • Rationale: Once
Additional Methods Component of the GVPTM Goal #20 (optional): The caregiver, *e*helper, teacher, friend, family, and/or significant other will participate in education and training.	Direct Ingredients • Information: Enhance the client's ability to be successful in the GVPTM through education and training of communication partners. • Modality: Enhance success through explanation and demonstration. (a) The clinician should have the client describe and demonstrate oral twang and belt to the person. (b) The client will produce examples of the oral and belt at phrase level. Once the person hears the difference, then the client will produce oral twang and belt at phrase level and the person will have to guess what voice was produced. (c) Vocal Loading Practice: The person will hold up a sign or chat in a videoconferencing platform to have the client switch between the	• Encourage the client's caregiver, friend, family member, and/or significant other to attend the last 5-10 minutes of the session with the client's permission.

	different voices in the vocal loading activity that was addressed in Goal #19. Next, the client will produce a portion of the activity switching between the voices and the person will guess the voice that was produced. • Method: Client and clinician work synchronously either in-person or through videoconferencing.	
Home Practice Goal #21 The client will complete home practice program as directed.	• Information: Enhance the client's ability to be successful in the GVPTM with daily practice • Modality: Enhance success through practice: (a) Continue vocal warm ups three times a day as described in Session 2. (b) Continue with home practice activities described in Session 3. (c) Practice all the voices in vocal loading tasks, switching from one voice to the next.	• Client will practice three times a day, once in the morning, once at lunch time, and once in the evening. Each practice session should last 5 minutes.