

PODCAST TITLE: SENSIORMOTOR IMPAIRMENTS b
ADULT STROKE REHABILITATION AND RECOVERY PODCAST SERIES
AMERICAN STROKE ASSOCIATION

- Patty Clements: [00:04](#) This podcast is supported by Kindred Healthcare. Kindred Healthcare is a sponsor of the American Stroke Association's Together to End Stroke initiative.
- Patty Clements: [00:13](#) Hello and thank you for joining us today as we continue the conversation of our five part podcast series addressing key recommendations from the American Stroke Association's Guidelines for Adult Stroke Rehabilitation.
- Patty Clements: [00:24](#) In today's discussion, we'll be taking a closer look at the recommendations for sensory motor impairments and activities.
- Patty Clements: [00:31](#) My name is Patty Clements and I'm with a communication team at the American Heart Association.
- Patty Clements: [00:36](#) Today we have the pleasure to hear from two key experts. First, we'll be hearing from Dr. Carolee Winstein who's a Professor of Biokinesiology and Physical Therapy and Director of the Motor Behavior and Neurorehabilitation Laboratory at the University of Southern California.
- Patty Clements: [00:51](#) Also with us today is Dr. Neila Donovan, an Associate Professor and Director the Communication Outcomes Research Lab at Louisiana State University Department of Communication Sciences and Disorders. Welcome to you both.
- Patty Clements: [01:05](#) Let's talk about communication problems that are fairly common after stroke. And Neila, we're going to look to your expertise now.
- Patty Clements: [01:12](#) With your background in speech language, can you talk a little bit about how the guidelines address the common issues?
- Neila Donovan: [01:19](#) Sure. I'd be glad to. And I would like to add one small caveat is that what's really important for communication is speech language and hearing. And the guidelines address hearing as well as some of the speech and language considerations that happen after stroke.

- Neila Donovan: [01:42](#) Typically though, I would say with hearing the important thing to remember is that many people in the prime age range for stroke have acquired hearing disorders that are associated with typical aging. It's called presbycusis. But that can certainly impact any type of communication that you're trying to have with someone with or without a stroke.
- Neila Donovan: [02:10](#) So I think that's important to remember is that you've really got to know the hearing status and not make determinations about what a person is understanding simply based on their inability to respond.
- Neila Donovan: [02:26](#) So let me talk a little bit about issues around the communication problems that result from stroke. They typically result from damage to different parts of the brain. And I would say that aphasia is the most common type of disorder that people know about. And that's really the disorder of our language from the standpoint of listening, speaking, reading, writing, understanding gestures, and all of the issues that go with that. And that's due to left brain damage for most people.
- Neila Donovan: [03:12](#) The right hemisphere of the brain is responsible for some of the what I call social language or social communication deficits that people will experience after damage either from a stroke, a brain injury, or dementia. But I will stay with stroke for today. The most common of those cognitive communication disorders is due to right hemisphere damage.
- Neila Donovan: [03:46](#) And then last, with regard to speech, we have two kinds of speech disorders where the language may be intact, they're going to understand. But the communication may break down at the point where the person cannot make his speech understandable because of weakness or paralysis of the muscles around the tongue, the lips, the jaw. And that's called dysarthria of speech.
- Neila Donovan: [04:24](#) The other is there's a certain subset of people that cannot put sound and word sequences together. And that's because of damage to a motor planning area in the brain. And that is called apraxia of speech. And those two are very different. They require different kinds of treatment approaches. But with those typically language is listening, speaking, reading and writing are less impaired than the ability to make your words understood due to paralysis or planning problems of the speech mechanism.

Patty Clements: [05:13](#) So as your saying, they are different so a lot of common issues here. And they do require different approaches. Talk to us a little bit more about that.

Neila Donovan: [05:22](#) Okay. Thing about choosing a treatment for any of the disorders I'm talking about is that it's very important to look at finding valid and reliable assessments.

Neila Donovan: [05:38](#) The guidelines talk about the World Health Organization International Classification of Functioning, Disability and Health. Which has three domains and those are impairment, activities and participation. And we have a lot of very good kinds of assessments for communication and speech in the impairment and activity area. So we can understand those. We have valid and reliable data.

Neila Donovan: [06:14](#) Participation on the other hand is: What do we need to do to make people be successful when they're out living their lives in their work, their home, their community? So in that case, we're trying to determine how effective the person is in communicative interactions. And in that realm, we have very few assessments.

Neila Donovan: [06:48](#) So the trick of finding valid and reliable assessments across the whole ICF is a little tricky. But once you get your assessment results, those will drive your treatments.

Neila Donovan: [07:04](#) Okay. So with aphasia, we know that we have evidence that some therapy is better than no therapy. We know that more intensive therapy is better than less intensive therapy. So having therapy four times a week for three hours at a time for two weeks to a month is much more effective than having therapy two times a week, one hour at a time for four weeks or eight weeks.

Neila Donovan: [07:40](#) However, if you can imagine very few people can, you know ... it's not really feasible to have that much therapy in that short of time for most people. And so, we modify, we change to make what is viable for the people getting the therapy.

Neila Donovan: [08:04](#) So the other things we know is that other benefits to aphasia therapy and making people more effective communicators has to do with using what has been called in the last several years the live process approach to aphasia. Where we're looking at the person as a social animal, if you will. And that we can't just help him find words or just make sentences longer. We've got

to facilitate the person, again, to take part in all of the life things he wants to take part in.

- Neila Donovan: [08:55](#) In part, that's important because we know that if people isolate themselves, that can lead to worse health, increasing depression and all of those kind of lead to a spiral down and a person may lose independence.
- Neila Donovan: [09:18](#) So I think the live process approach really has an emphasis on quality of life. And it looks at how the language that I talked about earlier and the person having therapy, all of those things affect quality of life. So they use different assessment tools, if you will.
- Neila Donovan: [09:44](#) And they also identify what I call barriers and facilitators to a person's success in environmental factors and personal factors. So for example, people can be very successful talking in a quiet environment. But you put them in a noisier environment, a lot more information for the brain to process and their language skills may break down and they'll be unable to find the words they want or put the sentences together. So we know that a noisy environment is a barrier to success. And you can learn how to modify those environmental problems.
- Neila Donovan: [10:35](#) From a personal standpoint I think it's important to recognize that how a person feels about his problem ... his communication deficit ... will affect if he's going to be an active participant in therapy. If he feels that the deficit is a stigma, he may not want to talk although he may be a pretty good communicator.
- Neila Donovan: [11:04](#) So we haven't always looked strongly at those personal factors. But with a life process approach or the ICF approach, both of those look at those barriers and facilitators. So we can help recognize these to make people more successful.
- Neila Donovan: [11:26](#) Another one of the barriers to success is family support, which is huge. And we do know and we do have evidence that training communication partners is very important and that it has an affect on the person's ability to communicate. So the partner's trained on how to give the best cues, or how to let the person have time to find the words. To not talk for the person, if you will. And how to recognize the person's strengths and things like that.
- Neila Donovan: [12:07](#) What's interesting is this communication partner training has been found to be very effective with people with traumatic

brain injury, people with dementia, and other types of communication disorders.

- Neila Donovan: [12:22](#) So that's a very promising area that we certainly are wanting to think about and talk about more.
- Patty Clements: [12:34](#) So you've gone over a number of different types of therapies and approaches here.
- Neila Donovan: [12:38](#) Right.
- Patty Clements: [12:38](#) What about supplemental therapies like computerized treatment ...
- Neila Donovan: [12:43](#) Right.
- Patty Clements: [12:43](#) ... other home activities? Give us a couple of examples.
- Neila Donovan: [12:46](#) Yes, right. Well, the one thing I did not mention earlier was we have some people who, for whatever reason, either ... Primarily, these are going to be people that are having difficulty with speech. So the dysarthria and the apraxia of speech. But in some cases now also with the aphasia's word finding and that sort of thing. And the use of augmentative and alternative communication devices are starting to come to the fore in aphasia therapy. The jury's still out.
- Neila Donovan: [13:29](#) There's a lot of research to be done because most of what we know about AAC comes from the children with developmental disorders like cerebral palsy or something of that nature. But the results are promising.
- Neila Donovan: [13:50](#) Some devices have gotten out ahead of the evidence so I just encourage people to talk to their speech language pathologist to really if they'd like to use or consider a device to understand what all the variables are. I know it's not my area of specialty and so I'm very fortunate to have an AAC expert here that I can go to because there are just so many variables that go beyond my scope.
- Neila Donovan: [14:25](#) So we have those kinds of devices. And we have low tech, which is writing or trying to have a person use gestures. Or maybe they'll have a word card or what I call a picture wallet or something where they'll keep pictures of important things and they can look at the picture and sometimes that'll help them come up with a word. So those kinds of things, those low tech

devices we've used for a long time to help people be more successful communicators.

Neila Donovan: [14:59](#) The high tech AAC devices are sound generating and have visual displays. So they're going to actually produce the speech that will be understandable when a person's speech is not understandable. So that's why the high tech AAC devices for motor speech make some sense. If the language abilities are intact enough to put the communication together.

Neila Donovan: [15:36](#) So we also know that computer training has been used to supplement treatment. I am stressing the word supplement because there are not necessarily any kinds of therapy out there that should be used by themselves. You always want to have an assessment and a treatment plan done by a speech language pathologist and then figure out how the treatment that they devise for you and then any supplemental kinds of treatment that you could do are put together.

Neila Donovan: [16:22](#) So that being said, we do know that there are certain computerized treatments that help. And I think the other thing that we know, though, is that you've got to be careful when you use a computer treatment because lots of times people get really good at doing the program and it doesn't generalize or carry over to their language ability when they stop doing the program. So it doesn't really have any affect on their communicative participation or communicative interactions where you're not using the program.

Neila Donovan: [17:15](#) So it's a little bit of a two edge sword but I always think practice is very good. It may be helping with the restitution of connections, which we know from the neuroscience now is an important part of what we do. And then we can work on compensatory strategies or compensation with other kinds of low tech devices or cueing strategies that are not necessarily computerized.

Neila Donovan: [17:52](#) I think the other alternative type things ... I mention group therapy. There's some evidence that for the benefit of group therapy across the continuum of care. So people benefit in different ways when they might be early in their program of rehabilitation versus when they're getting to the end of rehabilitation and getting ready to be discharged.

Neila Donovan: [18:22](#) And finally, when they go home, sometimes those groups are the person's lifeline and major opportunities to communicate with other people. So we really want to recognize how

important groups are. They're getting to be many, many community-based aphasia groups that primarily focus on just the communication.

- Neila Donovan: [18:56](#) So I'll go back and say there are all different kinds of groups. So there are groups where we're trying to get people to use their strategies to talk more. And there are also then support groups where the people that have had the stroke and aphasia or other cognitive communicative disorders, and their caregivers can come for simply support. And that becomes an incredibly powerful tool with regard to the recovery process for caregivers and people with aphasia.
- Neila Donovan: [19:40](#) In our group we divide those people up for at least a part of each group session. And then we bring them all together so the caregivers are able to watch people use their strategies, and to really see how people communicate with other people with aphasia. It's really different sometimes because they may do better and they may talk more when they're with other people who have the same problem.
- Neila Donovan: [20:12](#) There are many, many benefits to group but I think that we need to think about more of those groups and finding funding for them. Or finding benefactors who can help us because they're kind of expensive.
- Neila Donovan: [20:35](#) And after a certain point, of course, sadly professionals can't be reimbursed for treatment. And so, at that time some people just don't get anymore therapy. So these groups some of them are very reduced cost, some of them are free and you just go. And so, there are lots of ways to do it. But they're springing up all over and there's some really exciting things happening across the United States now that wasn't happening, oh, 10 years ago in this area.
- Neila Donovan: [21:19](#) So, probably the last thing I would do is talk about how do we supplement therapy. So if we just see a person twice a week for an hour that's two hours out of a person's whole week. So lots of times we send therapy home, supplemental homework. Or this might be the good time to do the computer programming type things. But the more we can get people talking outside of therapy, the happier we are as therapists because the way that I think you recover from aphasia is to talk and talk and talk.
- Patty Clements: [22:09](#) What about speech disorders that result from motor rather than purely cognitive impairment?

- Neila Donovan: [22:15](#) Yes. I mentioned those briefly earlier and those are what we call motor speech disorders. There are two of them, and they're very different, and they require very different types of treatment.
- Neila Donovan: [22:33](#) The first is what we call dysarthria. The dysarthrias are decreased understandability of a person's speech when his language ... reading, writing, listening, and speaking ... are relatively intact. So the person cannot get his message across but it's not because he can't find the words. It's because when his brain sends the words to his mouth, if you will ... the speech mechanism and throat ... that the words don't come out the way he wants. And so we talk about that.
- Neila Donovan: [23:15](#) The kind of dysarthria that a person has will depend on the location of his stroke. People with stroke typically have dysarthria that is either flacid due to paralysis of the face, the lips, the tongue. Or the larynx, the voice box, one of the vocal folds on one side can be paralyzed. And so, anytime something like that happens ... if half of your speech mechanism isn't working it's just like drawing a line down the body. So you have the weak arm, the weak leg or it's paralyzed totally. Same thing can happen with the face ... the eyes, the, you know, lips, tongue, throat. So half of your throat may not work when you're trying to swallow food, which I think we'll talk about later.
- Neila Donovan: [24:23](#) So that's dysarthria. And the treatments for dysarthria are really working to try and have the people become clearer, more precise. There's no set evidence that one treatment works better than another yet for dysarthria. Again, small subsets. A lot of different kinds of dysarthria. But we do know that one way to increase the understandability of speech is to slow down, make your speech more precise, get it to be louder ... increase the loudness of your speech. And those are kind of the basics. And those are things that people learn to do in therapy.
- Neila Donovan: [25:18](#) So, that's kind of the basic ... Again, communication partner training. If we can train communication partners to say, "Can you make that louder? Could you say that in a more precise way?" Those things will help the person. Often they recognize it and they'll do it if they've been really good in our therapies. Again, you've got to get the therapies to transfer out to the daily life. And that's where the communication partner is critical.

- Neila Donovan: [26:00](#) So for apraxia of speech. Now, it's really a different mechanism. In this case, the person's speech mechanism ... the tongue, the larynx, the pharynx, all of that ... is relatively spared. I won't say there's no weakening but it's not the main issue.
- Neila Donovan: [26:29](#) The main issue in apraxia of speech is that the person isn't able to ... he knows that he wants to say so his language is okay. But when it's time to program the words and the sentences, his motor planning programming area is damaged, and so he cannot put that together. And so, it may come out very garbled with sounds in the wrong place. A very severe kind of apraxia of speech is where the person can't coordinate getting his voice going with his speech. So there's no voice. You know, you've got to have a sound mechanism to carry the speech.
- Neila Donovan: [27:21](#) But I think that there are again some treatments. I would say that this is a place where ... well, probably with both dysarthria and apraxia of speech ... what we know about motor movement from the literature ... and this came from some of the early work by people that had worked on arms, and legs, and so forth ... but what we know is that mass practice ... doing a lot of practice in very intense kinds of settings that's meaningful, that works the best. And there are a couple of treatments out there for apraxia of speech that will start, say, with putting two sounds together, and then working up to words, and then, you know, putting phrases together, and that sort of thing. Always trying to move that programming piece in your brain to doing more complex things.
- Neila Donovan: [28:29](#) And so, we have that motor literature to fall back on, again, from arms and legs. But I do think that we are starting to really appreciate that kind of an understanding of that mass practice in an intense environment as a benefit for some people with apraxia of speech.
- Neila Donovan: [28:55](#) And then as I said, if the person cannot or will not use speech because he doesn't like the way his speech sounds, or he is too self-conscious, or whatever, an alternative for that person might be an augmentative or assistive device. And maybe a noise generating device. High tech. Not noise generating, I'm sorry. Speech generating device. One of the high tech devices I mentioned earlier.
- Neila Donovan: [29:28](#) So those are kind of where we're at right now with motor speech disorders.
- Patty Clements: [29:35](#) So how does dysphagia fit into all of this?

- Neila Donovan: [29:38](#) Ah, dysphagia. Well, it's a motor disorder, not a language disorder so different parts of the brain are affected. The person typically, if language is intact, they're going to be able to understand what you say, and they're going to be able to talk to you and respond to you. So this is not a language problem. This is simply a problem with the swallowing mechanism.
- Neila Donovan: [30:13](#) And so, the swallowing really includes some pieces of the speech mechanism. So the tongue, the lips, you know, getting the food into the throat, and then getting the food to go down the esophagus not down the trachea into the lungs is really what dysphagia is. It's just a swallowing impairment.
- Neila Donovan: [30:44](#) And as I said, it's one, though, of the important ones for people that have stroke. And in the early phases of stroke, it's one of the really important things to screen for as soon as you can. Because dysphagia affects a person's health because if you swallow and it goes into your trachea that's into your lungs and then that will cause aspiration pneumonia, which it occurs often enough that doctors in stroke units and so forth have said, "We've got to get this dysphagia screening done early."
- Neila Donovan: [31:32](#) So not only are we trying to prevent aspiration, we're also trying to ensure that people get proper hydration and nutrition while they are recovering from a stroke. So let's say a person cannot drink water. Well, the risk of being dehydrated is extremely high. Or let's say a person can drink water but cannot swallow meat or something high protein and that's a big jump between those two textures of food. But a person who can swallow water or something a little thicker like a milkshake, there are a lot of things you can give them to help them, but the food won't be nearly ... if we puree all the food it won't be nearly as appetizing as if they could eat the food off the plate.
- Neila Donovan: [32:32](#) This is where you dietary and nutrition experts in your hospitals and rehab centers come in. Even long term care. If a person goes to long term care after a stroke, those people work with the speech pathologist to find the proper consistency of food so that the person will be safe. Because we're always trying first to ensure safety. And then second the combo nutrition and hydration.
- Neila Donovan: [33:05](#) So, it's very much on the forefront of healthcare provider's minds. It's screened and treated early. I would say that we do bedside but the gold standard for dysphagia ... when I talked earlier with language ... you've got the gold standard, valid reliable techniques for identifying swallowing disorders are the

what I call video fluoroscopic examination. Or the FEES, which is the fiber optic endoscopic evaluation of swallowing.

- Neila Donovan: [33:51](#) So video fluoroscopic examination, the person ... it's what it says. They're placed in front of machine that takes kind of a moving picture of the person swallowing. They swallow barium so we can see where it goes. But it would help us then identify if the person is aspirating or not. It's also very invaluable in helping guide treatment because it helps us know: What is the consistency a person can eat? Or how tired does the person get?
- Neila Donovan: [34:32](#) So if a person can take four bites of food but then is so fatigued that he can't eat anymore, well we may need to consider having the person on some kind of feeding tube, like a nasogastric tube which might be placed through the nose for temporary only. Till the person gets better. But again, if they're not going to eat and drink the amount they need to maintain optimal nutrition and hydration, we may have to look for some alternative type of short term tube feeding.
- Patty Clements: [35:15](#) Neila, talk to us for just a second about a couple of those therapies for dysphagia.
- Neila Donovan: [35:20](#) Oh, yes.
- Patty Clements: [35:20](#) We were talking drug therapy, electrical stimulation. Just touch on those briefly.
- Neila Donovan: [35:24](#) Oh, gosh. Okay. Well, I will say there are many, many therapies out there. We do have some evidence for some of the behavioral ones. Such as we know things about upright seating that is better because the likelihood of the food going into the esophagus is better than if your head is tipped back or if you're laying down. Things like that.
- Neila Donovan: [35:56](#) We know that there are certain swallowing techniques that we can use to make the swallow stronger. Or to make the effort for swallows stronger to kind of build those muscles.
- Neila Donovan: [36:11](#) There's a device called the expiratory muscle strength trainer, which is the person blows on it but they're strengthening the muscles of respiration. And what they have found is that it helps protect the airway from aspiration. And there's some evidence that that works for dysphagia. Again, more evidence needs to come on that. And it's kind of a specialized training so you

would need a speech language pathologist that is familiar with it. But it's certainly in the literature.

- Neila Donovan: [36:54](#) I think that there are, sadly, also a number of different therapies for swallowing that are out there and being done, and that concerns me a little bit. Some of those that we know have uncertain benefit or very little benefit and are currently not recommended by the guidelines include certain drug therapies. Neuromuscular electrical stimulation, pharyngeal electrical stimulation, physical stimulation like moving up and down. And then some of the more transcranial direct current stimulation and transcranial magnetic stimulation. Those are all certainly things that are being used in other realms but not in terms of swallowing.
- Patty Clements: [38:01](#) Neila, any final thoughts for our listeners today?
- Neila Donovan: [38:04](#) Gosh, I guess what I would say is that I think it's extremely important to improving speech and language that people be able to talk often to as many people as possible. And that we need to make that available to them.
- Neila Donovan: [38:25](#) I do think that referrals for therapy helping our people that are senators and policy makers understand that therapy is chronic and long lasting, and may change over time. So one bout of therapy early on is not going to be enough for most people. I think that's so important.
- Neila Donovan: [38:50](#) And I would say that the same for cognition. And I would say probably the same for swallowing. If I want people to improve in swallowing, I'd love them to be eating and learning to do the thing that they will benefit from at the end of the therapy so they can all participate in their life roles. And hopefully what we hope for the most I think as speech language pathologists is that the work that we do to make people more effective communicators will increase a person's quality of life.
- Patty Clements: [39:34](#) To both of you ... Dr. Carolee Winstein and Dr. Neila Donovan ... thank you so much for your time today and for weighing in on such an important topic.
- Patty Clements: [39:42](#) I'd also like to thank our listeners. We hope you enjoyed today's conversation. And I'd like to remind you this is just one podcast in a five-part series. We hope you listen to the entire series and visit us at strokessociation.org/recovery for additional information.

