

### What is "motor speech"?

- > Learning to speak, requires individuals to learn how to plan, sequence, and/ or control movements of muscle groups used to generate speech
- > BUT for children who experience impairments in neurological development may have difficulty planning, coordinating, and executing speech sounds movements...
- > Similarly, adults with different 'conditions' (diseases, disorders etc.) that impact the nervous (central and /or peripheral) systems, which in turn, affect speech components (respiration, phonation, prosody, and articulation...)

### Motor Speech

- > First you need to retrieve the words and information you want to say
- > If you don't have the information you will not know how to produce the sounds and the words

### Speech Program Information

- > Brain tells us we need to move our lips first
- > Tongue needs to move, the soft palate
- > This needs to happen in the right order
- > Articulators are muscles so the brain will send signals to our muscles to tell them when and how to move to articulate the sounds to produce words
- > Is something going wrong with the green circle etc? Processing step or when articulators should move then we are dealing with a motor speech disorder.

### Different conditions can impact speech

The following conditions include: what they are, speech characteristic and treatments

### Motor Neuron Disease

- > it is a progressive condition and the cause of the condition is unclear
- > 5% of cases have a family history, which is called familial motor neuron disease
- > If there is no family history it is called sporadic motor neuron disease

Speech characteristics include:

- > Faint speech
- > Slurred or unclear speech
- > Muscle weakness
- > Spastic speech
- > Slow rate

Treatment for MND:

- > No cure so the point of treatment is to provide comfort and the highest quality of life
- > Loss of functions = mobility, communication, swallowing and breathing are all affected
- > Breathing masks may be used to help with the breathing aspect
- > Feeding tube used to help patients who cannot feed themselves



### Motor Neuron Disease (cont)

> Some medications can help with survival rate but cannot decrease the progression of the disease

Informative websites:

> Show where to get support and give care, how to talk to children about the disease, talking about the condition, helping to bring light to the disease

Communication aids for MND:

> MND impacts the muscle strength in the lips, tongue, vocal folds and chest, and can also weaken muscles for facial gestures

> Recording messages early on in the disease so you can play them when you need to explain something further on when you cannot express speech, device used.

> Record words or phrases

> Eye gaze technology, eye movement can correspond to certain statements or letters. Yes or no questions etc.

### Parkinsons Disease

> Decreased breath support

> Change in vocal quality

> Mumbled speech

> Decrease in volume of speech

> Short utterances

> Voice tremors

> Hoarse/ gravely

> Parkinsons' disease is a progressive disorder which affects the central nervous system and heavily affects movement and uncontrollable tremors. This is caused by decreased dopamine levels in the system because there is dead dopamine cell which is in charge of automatic and motor movement

Treatment:

> Cannot be cured

> Medication helps to control symptoms

> Exercise

> Trying to increase their quality of life because it is progressive

> There are medicines which are used to replace the dopamine cells that died and increase dopamine levels as dopamine is in charge of the automatic and motor movement

> Physical and occupational therapy

> AAC to make communication easier

Tips:

> Speaking slowly

> Quite a space

> Make sure the patient can see your face

> Short phrases

> AAC



### Advanced Multiple Sclerosis

> A progressive demyelinating disease where the protective cover of nerve cells in the brain and spinal cord are damaged. This results from the immune system not recognizing the cells and attacking the body's cells

> Affects movements so then also affects speech and swallowing

Common speech characteristics include:

> Speech pattern disrupted, normality

> Long pauses between words, single syllables

> Words can be slurred, due to weakness or incoordination of the speech muscles

Treatment:

> No cure

> Treatments and medicines to help to manage the condition

> Treatment varies depending on the stage of the disease

> Medicines which relieve muscle spasms Or relax muscles

> Plasma exchange

> Fatigue: regular sleep, exercise and diet help

> Repetition when speaking and speaking slower help

> Patients may have trouble with word retrieval so using similar words or describing the word they are trying to say is important for a communication partner

### Childhood apraxia of speech

> Uncommon speech disorder where children have difficulties creating accurate speech movements

> The brain struggles to develop plans for speech movements and it is non-progressive

> Most cases are unknown but can be caused by damage to the brain or genetic disorders or stroke or traumatic brain injury

Speech characteristics:

> Trouble moving smoothly from one sound, syllable or word to another

> Groping, movements with the jaw, lips or tongue to make the correct movement for speech sounds

> Vowel distortions, such as attempting to use the correct vowel, but saying it incorrectly

> Repeated production of vowels

Treatment: three approaches

> Motor based approach, based on motor learning

> Cues and stimulus

> Linguistic approaches, address language impairments

> Multi-model communication approach, AAC to help them communicate

Three features:

> Inconsistency

> Difficulties transitioning between different sounds and syllables

> Prosody, stresses, pitch and rhythm of speech

> Practice and encouragement from family can help patients with apraxia



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