

## Speech and Language Problems in Parkinson's Disease

### Introduction

Most people take language and the ability to speak for granted, but communication through speech and language is a complex process co-ordinated through the brain that requires precise timing, nerve, and muscle control.

### Whenever we speak our brain has to:

- Remember all of the vocabulary and organise it into the correct order to make sentences;
- Remember all the muscle positions for the body parts and systems (including the larynx, which contains the vocal cords, the teeth, lips, tongue, mouth and the respiratory system) needed to say the words;
- Send messages to the muscles to make the required movements;
- Receive messages back from the nerve sensors in the body parts and systems which have moved;
- Receive messages back from our ears telling us that our mouths are making the correct sounds for what we want to say.

### Speech and Language Problems of Parkinson's Disease

In Parkinson's disease (PD) the nerve cells that produce dopamine, the chemical which transmits signals to other nerve cells in the brain to produce movement, are lost in PD. By the time clinical symptoms of PD occur a high number of the cells producing dopamine have already died (60-80%). The remaining dopamine producing cells will continue to die over time. Given the movement control and messaging required within the brain to facilitate speech and language, it is not surprising that problems with speech (known as dysarthria) and significant difficulties in using and understanding written and spoken language (also known as dysphasia) are seen in PD. Just as PD progresses over time, problems with speech and language will also worsen as the disease progresses.

Many people with PD have problems speaking when they first develop the condition and almost all patients (89%) with PD will experience problems with their speech and voice at some stage.

Subtle changes may happen early, with the person's voice becoming softer and flat in tone, making it hard to hear. The severity of the changes to speech can vary from one patient to the next. In fact, some patients may have their speech severely affected, while others may only have slight effects on their speech. In advanced stages of PD, speech may become unintelligible for some people.

### What are the Problems with Speech in Parkinson's Disease?

Problems with speech which might be encountered include:

- Soft voice, lack of volume or fading of voice volume (also known as hypophonia);
- Slight slurring or indistinct speech;
- Lack of variation and expression;
- Hoarse or tremulous voice;
- Speaking too quickly – i.e. the expression of words accelerates with the gap between words getting shorter and shorter (also known as festination of speech);
- Hesitancy or difficulty getting the voice started;
- Repeating of syllables, words or phrases several to many times, interruption in the flow of speech, with stuttering or stammering (also known as palilalia).

These speech problems occur due to lack of co-ordination or reduced movements of the muscles in the voice box (larynx), throat (pharynx), roof of the mouth (soft palate) tongue, lips and lungs.

Both the hesitancy or difficulty in getting the voice started and repeating syllables, words or phrases can incorrectly give the impression that the patient is experiencing some memory impairment or dementia.

One would think it would be easy for people with PD to focus on speaking louder. However, it has been shown that people with PD do not notice that they are not speaking loud enough as their brains can no longer detect this. Consequently, they are not aware that their speech is getting softer and more difficult to understand and are likely to feel frustrated at being asked to constantly repeat themselves. They may even complain that the listener needs a hearing aid! This is frustrating for people with PD and their families.

In addition to having problems with speech itself, people with PD find walking while talking challenging and can sometimes lose their balance and fall. It is now known that using language while walking has an adverse effect on gait in individuals with or without PD. However the impact is greater in people with PD and therefore trying to talk while moving may potentially increase the risk of falls in people with PD.

## What are the Language Problems Which Occur in Parkinson's Disease?

Besides the frustrating speech and voicing problems of PD, people with PD sometimes experience significant difficulties in using and understanding written and spoken language (also known as aphasia). The exact cause of these language problems in PD is still not known.

People with PD may have difficulties in identifying words or with grammar which impedes their ability to express their ideas verbally. They tend, for example, to use simplified sentence structures as well as an increase in the frequency and duration of hesitations and pauses.

Some people with PD find that when listening to others speak, it is sometimes hard to understand the speaker's language if they use complicated sentences to express their ideas.

These language problems can make speech problems more difficult to deal with, so it is important to identify these language difficulties when they appear.

## Are There Other Features of Parkinson's Disease or its Treatment which can Negatively Impact Speech and Language in Parkinson's Disease?

Yes. However before reading this section it is important to remember these are possible problems which can occur and not everyone will experience these.

The other features of PD or its treatment which can negatively impact Speech and Language include:

- Problems with swallowing or drooling (See also the Parkinson's Association's Information Sheets on Problems with Swallowing and Drooling in Parkinson's);
- Previous brain surgery (pallidotomy, thalamotomy or subthalamotomy) which destroyed part of the brain in order to treat tremor or dyskinesias in PD. These surgeries have been shown to cause irreversible adverse effects on speech in some patients;
- Deep Brain Stimulation (DBS) to treat motor symptoms of PD. This can worsen the ability of a person with PD to speak;
- Worsening of memory processing and thinking (i.e. cognitive impairment) due to medications used in PD. For example:
  - Use of anti-cholinergics in the elderly can cause cognition problems, particularly if there is already some evidence of mental impairment;
  - L-dopa and dopaminergic drugs while improving the physical symptoms of PD may also cause a range of cognitive problems ranging from mild disturbances in concentration through to frank confusion and hallucinations;
  - Development of dementia in PD, with or without Lewy Bodies (see also the Parkinson's Association's Information Sheet on Dementia and Parkinson's Disease). Since memory is critical to speaking, the inability to remember and to think clearly hinders a person's speaking ability. Words may become jumbled and as the dementia progresses, normal speech patterns are often replaced by muttering;
  - Depression in PD which can include problems with concentration, attention, multi-tasking and slowed thinking (see also the Parkinson's Association's Information Sheet on Depression and Parkinson's Disease);
  - Medical problems such as: infections; sleep disorders; vitamin deficiencies and medication toxicity can also lead to confusion and memory loss.

## What is the Impact of Problems with Speech and Language on Quality of Life?

Our use of speech and language is important in how we communicate and interact with others. Consequently, the problems people with PD encounter with speech and language can have a significant negative impact on the quality of their life. Interestingly, people with PD and their families often report reduced ability to communicate as the most significant PD problem for them.

Problems with speech and language may make everyday activities, such as talking to friends or using the phone, difficult. Taking turns to speak, following fast-changing topics or interrupting might be difficult, responding to questions may end up being minimal and taking the lead in conversations can also be challenging.

PD also often causes a loss of facial expressiveness (also known as hypomimia). That change, combined with a soft, monotone voice, can lead family and friends to think the person with PD is depressed, apathetic, bored or disinterested. The upshot is that others stop engaging people with PD in conversation.

Not surprisingly, people with PD have reported that they are less likely to participate in conversations or to have confidence in their voice when compared with similarly aged healthy individuals.

Unfortunately, once speech impairment starts discouraging someone from conversing, the inactivity may accelerate the speech deterioration.

## Can Anything be Done to Treat Speech and Language Problems Seen in Parkinson's Disease?

Yes. Sadly, although the majority of people with PD experience some type of speech problems, less than 5% get treatment for those speech problems. This is unfortunate, as research shows that effective treatments are available for some of the speech, voice and language problems of PD.

Medication, speech and language therapy and brain surgery have all been evaluated as potential treatments for speech and language problems of PD.

The various types of brain surgery used in the treatment of PD over the last 30 years or so have generally not been shown to have a beneficial effect. In many cases surgery has actually caused deterioration in speech and language in PD.

Parkinson's medications by themselves are not effective in improving problems with speech. They can however help by improving the volume and clarity of speech and body language while the medication is working (i.e. when "on"). The converse of this is that when the medication is not working (i.e. during "off" periods) the voice may be quiet and difficult to understand. This can be really frustrating, but there are ways to adjust life around 'on/off' periods. For further information regarding the "on/off" syndrome please see the Parkinson's Association's Information Sheet on the On/Off Motor Fluctuations in Parkinson's Disease.

Speech problems in PD do not respond well to speech and language therapy if the mobility

problems and tremor of the person with PD are left untreated.

It is now known that optimal drug treatment of PD combined with speech and language therapy can be effective in treating speech problems in PD.

It is therefore important for movement problems to be optimally treated with medication in order to gain benefit from speech and language therapy.

## Tell me more about Speech and Language Therapy

Speech and language therapy usually involves a series of voice exercises administered by a Speech and Language Therapist. The voice exercises include training in control of speech rate, stress/intonation or expression of emotion, loudness, articulation and breathing so as to support the voice.

Traditionally, speech-language experts trained people with PD to concentrate on multiple, separate aspects of voice and speech, such as breathing properly, articulating well, increasing volume, and slowing down the rate of speech. But even though people with PD sounded better inside the treatment room, the benefit typically vanished once they walked out the door and reverted to usual habits. Despite this limitation, there are still exercises that a person with PD may find helpful which can be done at home.

However, in 1987, University of Colorado speech-language researcher Lorraine Olson Ramig devised the Lee Silverman Voice Treatment (LSVT), the first speech treatment tailored for PD. This treatment has been shown to be effective in treating early speech impairment in PD. The treatment was named after a Parkinson's patient whose family funded the research. Research into LSVT over the last 15 years has shown that people with PD who received LSVT improved their vocal loudness, intonation and voice quality.

Following LSVT the voices of people with PD grow louder by about 5 to 6 decibels, which makes a big difference to a listener's ability to hear them. When prompted with just one cue of "Speak loudly!" or "Think loud!", people with PD automatically take in a deeper breath, open their mouth more for better resonance and articulation, and increase volume. Research has also shown that some of the gains from LSVT persist for two years after treatment. Recent studies have also documented improvements in slurring and indistinct speech, facial expression and swallowing following LSVT. Ideally, people with PD should keep up voice exercises to maintain benefits. Occasional tune-up therapy visits may be needed.

LSVT is useful at all stages of PD, however it is generally considered that early access to treatment is preferable. It has not however been successful

in people with PD who experience more severe symptoms, such as “festinating speech” or palilalia and significant hesitations in spontaneous speech. Unlike other motor impairments in PD, these symptoms have not been successfully treated with medication or surgery. To date, there is no treatment approach that can successfully manage these more severe speech symptoms.

## So How Does LSVT Differ from Traditional Speech Treatments?

- LSVT is much more intensive, requiring four rigorous one-hour sessions a week and daily voice homework exercises for one month. This intensive mode of treatment facilitates learning and retention of the skills learned.
- The LSVT approach centers on one therapeutic target at a time so that effort can be invested in achieving that target alone. A therapeutic target might be ‘increasing vocal loudness’ or ‘enhancing speech intelligibility’ rather than thinking about several aspects of voice and speech production at once.
- LSVT focuses on improving vocal loudness by exercising the muscles of the voice box (larynx) and speech mechanism through a systematic hierarchy of exercises.
- LSVT attempts to overcome the sensory processing deficit that affects speech in PD. For example, by recording the voices of people with PD and playing them aloud, the therapist can convince them before treatment that their voices are weak. LSVT doesn’t train people with PD to actually yell or scream, although to them it may feel disconcertingly as though that’s what they’re doing.
- The person with PD is taught to be aware of sensory feedback from the voice, as well as to self-monitor voicing patterns and voice quality. The increased self-awareness of voice allows for correction of errors and for faster progress toward the target.
- The LSVT course can be accessed over the internet and there is also a DVD of speech exercises available (see <http://www.lsvtglobal.com> for further information).

## What Other Help is There for Problems with Speech and Language?

Speech and Language Therapists can help people with PD maintain as many communication skills as possible. In addition to teaching speech exercises such as those discussed above Speech and Language therapists can also help by:

- Teaching strategies to help manage drooling;
- Teaching strategies to help manage swallowing issues;
- Teaching techniques that conserve energy, including non-verbal communication skills e.g. facial expression, body language and gestures;
- Recommending use of notebooks and language boards as an alternative communication technique;
- Recommending communication aids such as a small personal microphone system to amplify a soft voice, a telephone equipped with a keyboard so speech can be typed and read by a relay operator to the listener or a computerised device that speaks aloud typed in phrases.

Finally, there are data emerging which suggest that singing in groups helps counteract problems that may occur with speech and language in PD. Studies are currently ongoing to find out if singing in groups helps the voice and speech problems related to PD more than speech therapy without singing. So for those who enjoy singing, joining a choir may be beneficial. Some people with PD have also reported improvements in tremor and movement problems from singing in groups.

## Should Speech and Language Therapy be Available to all People With Parkinson’s Disease?

The 2006 English and Welsh National Institute for Clinical Excellence (NICE) Guideline for Parkinson’s recommends that access to speech and language therapy should be available to everyone living with PD.

The earlier people with PD get access to a baseline speech evaluation and speech therapy, the more likely they are to improve their speech and voice and maintain effective communication over the course of their PD.

The available evidence suggests that these sorts of behavioural speech therapy regimens really work, so there is no reason for people with PD to keep having frustrating conversations with others who pretend they understand what is being said.

## How can Someone with Parkinson’s Disease Access Speech and Language Therapy?

A doctor or consultant can provide a referral to a Speech and Language Therapist working in the HSE. However, there is unfortunately a shortage of qualified Speech and Language Therapists working in the HSE in Ireland.

Self-referral to see a private Speech and Language Therapist is also possible. The Irish Association of Speech and Language Therapists in Private Practice (IASLTPP) site can help find a private practitioner in specific area. Their website is available at: [www.iasltp.com](http://www.iasltp.com)

Many Speech and Language Therapists working in the HSE or in private practice are trained to administer the Lee Silverman Voice Therapy. Details of Speech and Language Therapists trained in LSVT around the world can be obtained from the LSVT Global website on <http://www.lsvtglobal.com>.

If a person with PD decides to seek private treatment they will have to pay for the treatment. However there may be some reimbursement for speech and language therapy under private health insurance schemes. People with PD will need to check their individual policy for specific reimbursement entitlements. Tax relief may be obtained on speech and language therapy fees (see current revenue guidelines for applicable threshold and rates).

### What Can a Person with Parkinson's Disease Do to Help Improve their Speech and Language?

- Work with their doctor or consultant to optimise drug treatment. In addition to benefiting other symptoms of PD this will facilitate getting maximum benefit from any behavioural treatment.
- Pay attention to any problems with drooling or swallowing and try to resolve these problems. If needed seek specialist help from a Speech and Language Therapist.
- Get advice from a Speech and Language Therapist about exercises that will improve speech and do them! Have regular check-ups so that specific exercise programmes can be given as changes occur in speech.
- Discuss with the doctor, consultant or Speech and Language Therapist if LSVT may be beneficial to treating specific problems experienced with Speech and Language.
- Be aware that fatigue significantly affects speaking ability. Techniques that work in the morning may not work later in the day. Plan periods of vocal rest before planned conversations or phone calls.
- If the person with PD enjoys singing they should consider joining a choir as this may help improve speech and language.

### When speaking:

- Choose an environment with reduced noise. It can be tiring to try to "talk over" the television or radio.
- Try and remain as relaxed as possible and maintain good posture;
- Keep all sentences simple, short and precise;
- Speak slowly;
- Make the tongue, lips and jaw work hard to enunciate all sounds in the words clearly;
- Over-articulate speech by prolonging the vowels and exaggerating the consonants;
- Always try to imagine speaking in a bigger room in order to produce a good, loud voice;
- Remember that it is better to feel that speech is too loud rather than too soft;
- If speech has not been understood, instead of repeating the sentence try to think of a new way of expressing the sentence to make it easy for the listener to understand.
- If the person with PD is soft spoken and their voice has become low they should consider using an amplifier.
- If the person with PD is still able to write without too much difficulty they should always carry a paper and pen as a backup so they can write down what they are trying to say.
- Remember not to get frustrated with the listener when communicating is proving difficult since problems with speech and language are also challenging for the listener.
- Do not try to walk and talk at the same time.

### What if there is an Emergency, How Can a Person with Parkinson's Disease Experiencing Problems with Speech and Language Communicate?

- Use an intercom system or baby monitor to alert others that there is an emergency.
- Use bells or buzzers if they are not able to speak. Use "codes" that signify urgency.
- Carry a portable phone and pre-program this and all other phone at home so that the necessary emergency numbers can be automatically dialled.

- Consider a “life call” button if a lot of time is spent alone.

### Tips for Family and Friends of Someone with Parkinson’s Disease:

- Encourage them to seek speech therapy early on so that they can remain active at working, socialising, and enjoying life.

### Try to help the person with PD by not:

- Forcing them to speak or to see people they do not want to;
- Talking for them unless absolutely necessary;
- Interrupting when they are trying to say something;
- Insisting that the person pronounces each word perfectly;
- Becoming irritated when the person cannot communicate;

### Isolating the person with PD:

- Trying to get them to talk while they are walking.

### Tips for Talking to Someone with Parkinson’s Disease

- Ensure that the person with PD feels that you still value talking to them, despite their PD. Simple gestures like maintaining eye contact, holding their hand or facing them while engaging in conversation can help to achieve this. Remember that difficulty with speech doesn’t have anything to do with intelligence and the person with PD is often likely to feel frustrated and impatient when trying to communicate;
- Make sufficient time to talk to the person with PD normally while you are relaxed;
- Give them the encouragement, opportunity and time to talk;
- Be patient and do not interrupt;
- Talk normally – do not shout;
- Do not ask their carer to speak for them;
- Do not talk from one room to another;
- Do not walk away while they are talking;

- Do not speak above noise, such as the TV or radio;

- Listen carefully;

- Do not pretend to understand if you have not;

- Ask them to repeat what they have said but louder or in another way;

- Do not finish the sentence for them.

### If the person with PD is having difficulty with use of language:

- Use short sentences and stress key words;

- Do not ask complex questions;

- Make sure they can see and hear you;

- Use body language and facial expression. Note: In some communities and with some individuals this can be interpreted in different ways, and so may not be appropriate;

- Vary the tone of your voice;

- Do not embarrass them by making them join in a group if they do not want to;

- If verbal communication is becoming overtly challenging, consider using a speech aid to help. A Speech and Language Therapist will advise on this.



## References:

Parkinson's Disease- National clinical guideline for diagnosis and management in primary and secondary care: National Collaboration Centre for Chronic Conditions (funded to produce guidelines for NICE for England and Wales). Published by Royal College of Physicians, 2006.

Parkinson's UK Information Leaflet FS07 on Speech and Language Therapy (March 2008).

Parkinson's UK Information Leaflet FS06 on Communication and Parkinsons Disease (August 2010)

WebMD, Parkinsons Disease Health Centre- Speech and Language Therapy - Reviewed by Jon Glass on March 15, 2010

## Other Relevant Information Sheets:

M3.1: Motor Fluctuations in Parkinson's Disease (On/off, Wearing Off, Dyskinesias).

NM2.2: Problems with Swallowing in Parkinson's Disease

NM2.4: Problems with Drooling in Parkinson's Disease

NM14: Dementia and Parkinson's Disease

NM3: Depression and Parkinson's Disease

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## Further Information:

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**DISCLAIMER** – The information on these pages is not intended to be taken as advice. No changes to your treatment should be made without prior consultation with your doctor or allied health professional.

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