

Parkinson PULSE

Connecting people living with Parkinson disease in Alberta



**TREATMENT
OPTIONS
IN PARKINSON'S**

Volume 1: Medication



If you want to stay safe at home, Home Instead can help.

Call (403) 984-9225 or visit HomeInstead.com/Calgary



Proudly Serving Calgary, Edmonton, Red Deer, Leduc, Wetaskiwin and Surrounding Areas

Services

- Personal Care
- Companionship
- Meal Prep
- Transportation
- Parkinsons Care
- Memory Care
- Arthritis Care
- Diabetes Care
- Chronic Conditions Support

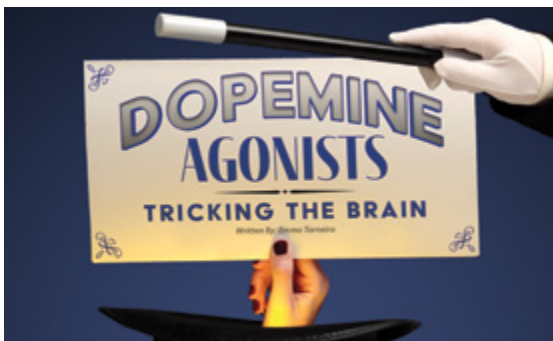
Each Home Instead® office is an independently owned and operated franchise of Home Instead, Inc., an Honor Company. © 2023 Home Instead, Inc.



7 How Medication Works



14 COMT Inhibitors



17 Dopamine Agonists

Summer 2024 IN THIS ISSUE...

Features

- 4 **Cover Story**
Treatment Options in Parkinson's:
Volume 1 – Medication
- 7 **How Medication Works**
The Right Dose at the Right Time
- 10 **Levodopa**
Will It Work for You?
- 13 **Understanding MAO-B inhibitors**
and Amantadine
- 14 **COMT Inhibitors**
in the Management of Parkinson Disease
- 15 **Managing Your Medications**
Consistency is the Key
- 17 **Dopamine Agonists**
Tricking the Brain
- 20 **Medication Reminder/Tracker**

Every Issue

- 3 **MESSAGE FROM OUR EXECUTIVE DIRECTOR**
- 12 **PROGRAM NEWS & UPDATES**



Articles and information contained in the Parkinson Pulse are provided solely for the reader's interest.

Articles do not necessarily reflect the views of Parkinson Association of Alberta and are NOT intended as medical advice. Please consult your doctor or neurologist in all matters relating to health concerns or medication.

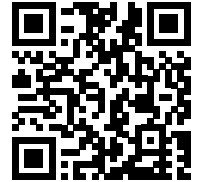
Parkinson Association of Alberta is the source for support, education and inspiration for people impacted by Parkinson disease and Parkinson's Plus Syndromes, and engagement in important quality of life research with an emphasis on Alberta.

CONTACT US

Toll-free: **1-800-561-1911**

Email: **info@parkinsonassociation.ca**

Website: **www.parkinsonassociation.ca**



JOIN THE CONVERSATION

 /ParkinsonAssociationOfAlberta

 Parkinson Association of Alberta

 @PDAssocAB

 Parkinson Association of Alberta

 /ParkinsonAlberta



Trust Kal with your brakes!

What's included in our brake packages?

- Brake pads
- Brake rotors
- Installation of parts by trained technicians
- Caliper servicing
- Bleeding of brake fluid system

3-YEAR/40,000 KM WARRANTY ON BRAKE PACKAGES

Scan QR for Tire Savings & Promotions





Message from our Executive Director

Dear friends,

As we welcome the warmth of summer, I wanted to extend my heartfelt gratitude for your unwavering support of the Parkinson Association of Alberta. Your involvement continues to shape our community and drive our mission forward. Together, we are adapting to meet the evolving needs of those affected by Parkinson's disease, and it is your feedback and participation that guide our efforts.

I also want to take a moment to welcome our friends from Alberta's north and the Northwest Territories. Funding from Canada's Age Well at Home Program has made it possible for our team to spend time in areas of our province and into NWT where support for people affected by Parkinson disease is limited. We have been blessed with meeting some incredible people and look forward to continuing this journey together.

Summer brings with it a flurry of activities and opportunities for us to come together. One event we're particularly excited about is the upcoming Step 'N Stride Walk for Parkinson's. This annual event not only raises crucial funds but also fosters a sense of unity and empowerment among our community. Whether you walk, volunteer, or simply cheer from the sidelines, your participation makes a meaningful impact.

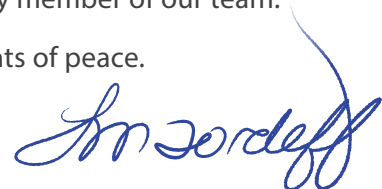
In addition to the walk, we have planned various summer social events. These events are great opportunities for sharing experiences and building friendships that extend beyond our regular meetings and support sessions. We hope you will join us.

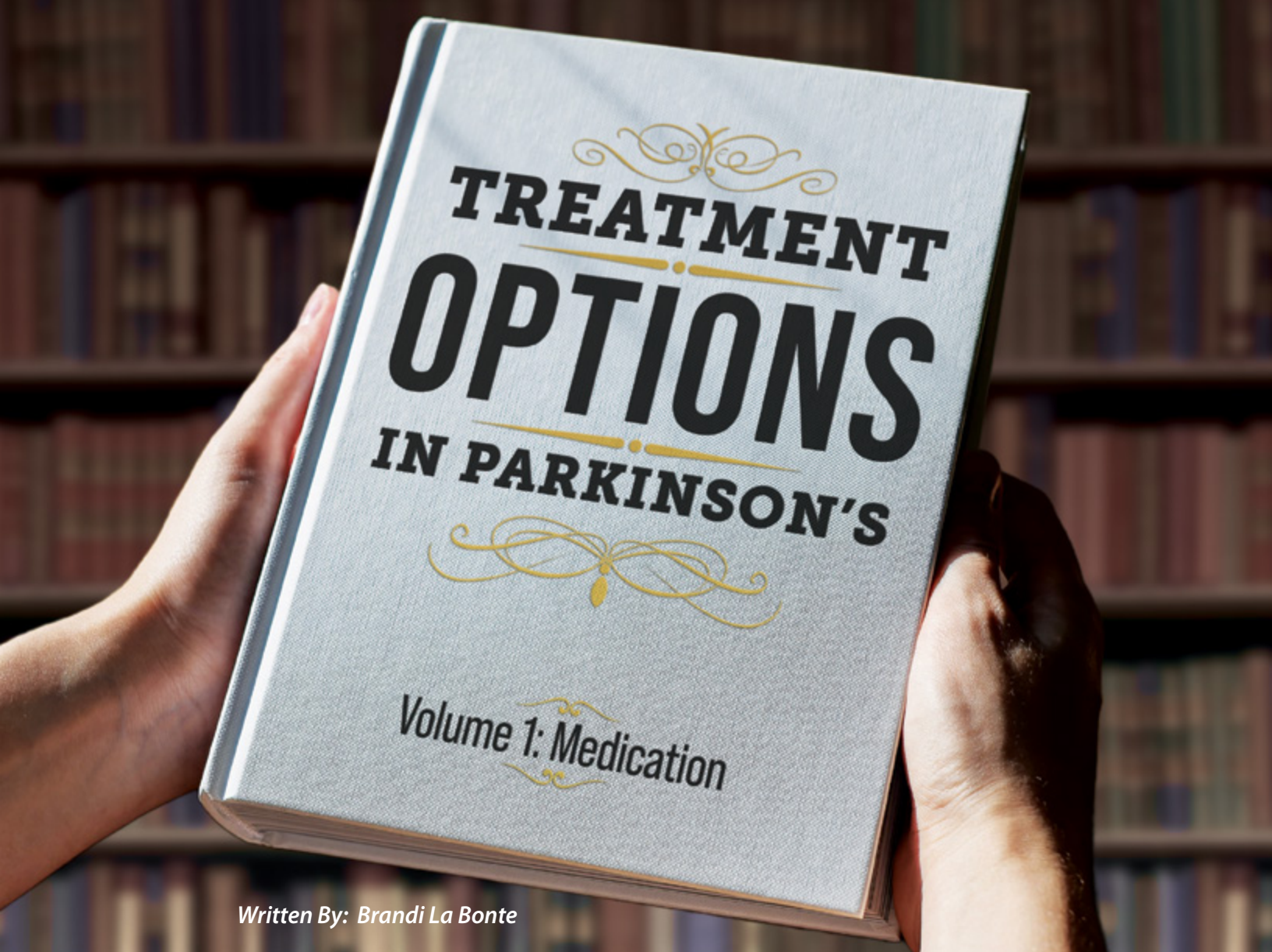
This edition of Pulse focuses on an important theme: treatment options. Parkinson's disease management is a journey that requires understanding and exploring various treatment avenues. From medications to therapies, this issue features practical insights that can enhance your quality of life. We hope you find it informative and empowering as you navigate your own unique path with Parkinson's.

As always, your well-being remains our priority. Summer is a time for rejuvenation, and we encourage you to take moments of rest and relaxation. Should you have any questions or wish to share your thoughts, please don't hesitate to reach out to me or any member of our team.

Wishing you a summer filled with warmth, community, and moments of peace.

Lana





Written By: Brandi La Bonte

Did you know “the array of pharmacologic and surgical treatments available for the treatment of idiopathic Parkinson disease (PD) is broader than for any other degenerative disease of the central nervous system”?

If you are a person with Parkinson disease you have likely already started or will eventually need to take medications. The goal of Parkinson disease treatment (generally speaking) is to provide control/management of symptoms for as long as possible while minimizing adverse effects and focussing on addressing the symptoms that undermine a person’s quality of life. And, as Parkinson’s progresses and your symptoms change, your medications will also need to change. This may be the kind of drugs you take, how many pills you take and/or the timing of each dose. Treatment options for Parkinson disease as a whole can be divided into three “categories”: pharmacologic (medications), surgical, and nonpharmacologic (non-medication).

There is currently no cure for Parkinson disease and no treatment has been proven to slow, stop or change the progression of Parkinson’s; however, there are treatments that offer significant symptom relief of motor symptoms. The impaired movement and motor symptoms attributed to Parkinson disease are caused by the loss of dopamine; as such, the core Parkinson’s-specific medications are aimed at replenishing or simulating dopamine to combat these symptoms.



When Should I Start Medications?

While it may not be necessary to immediately start medication to treat Parkinson's symptoms; when symptoms start to interfere with your quality of life or the ability to function at a level that you want (in other words, they are causing "disability"), it is time to think about medication. For some people, this may be soon after the symptoms appear and for others it may be some time later. The decision to start taking medication is one you make together with your doctor and requires consideration of potential benefits, risks, and the availability of alternatives. There are some people who are reluctant to take levodopa, believing it will delay symptoms, lose effectiveness over time (more on this in other articles in this issue), or simply view it as a last resort. And while the decision to take medication is personal, it should be noted that there is no reliable data that levodopa contributes to faster disease progression or produces damage to brain cells; and most neurologists agree that delaying treatment too long is unwise.

Determining what medications to prescribe, how much and how often can be tricky as there are a lot of variables to consider. In addition to how an individual responds to certain medications and/or dosages there are other factors to consider. For example, "Treatment of early disease generally differs from later stages when various complications occur. It is also influenced by the patients' age. Younger patients usually develop motor complications earlier than older patients and these symptoms can be severe.

On the other hand, dementia is less common in younger patients who may better be able to tolerate individual but potentially complicated drug regimens that would be inadequate for older patients."²



What Types of Medication are there and What Do They Do?

Symptoms of Parkinson's appear when the levels of a chemical in your brain, called dopamine, are low. With too little dopamine, movements don't happen the way they did before. They are slower, there may be a tremor and coordination may be "off".

Medications that treat Parkinson disease do so in multiple ways which we will cover in more detail throughout this issue. In general, though when it comes to Parkinson's medications, they will likely do one or more of the following:

- » Increasing/adding dopamine
- » mimicking dopamine
- » preventing the breakdown of dopamine before it can be used in the brain.
- » preventing the breakdown of levodopa before it can be changed into dopamine.

Generic vs Branded Medications

There has long been debate about which is better branded vs generic ...well, anything. From socks to dishwashing soap, to ketchup and batteries, etc. – the list goes on and on. For some it is perceived quality, for others personal preference, for others still cost; but when it comes to medications that are the key factor in moving vs not moving, having a good day vs having a less than stellar day – there doesn't feel like there is a lot of wiggle room. So, let's break it down.

When patents held by pharmaceutical companies expire on their branded medications the medication is then able to be "copied" by other manufacturers and produced more cost-effectively. Generic medications are generally cheaper because they do not incur the costs that come from developing and marketing a new drug.

Most healthcare systems, provincial drug formularies, insurance companies, etc will utilize and/or cover generic medications because they are primarily as effective as the branded version but cost less. Your treating physician will decide whether to prescribe you branded or generic versions of your medication. Sometimes there is no generic version available, sometimes the branded version is not covered by a drug formulary or insurance company, and sometimes it is because there is a solid history of the generic

medication performing as well as (or better than) the branded version.

The active ingredients (the part of the drug that does the heavy lifting) is ALWAYS identical in branded and generic medications. What may be different are the non-active ingredients (fillers). Most people experience identical benefits when taking a generic medication; there are some however, who may notice a difference. Speak with your doctor if you notice any differences in medication response when switching from a branded to generic. As for the quality of the generic, it also must pass the same rigorous testing and licensing that the original branded drug did.

Side Effects

Along with the needed effects of medications, there are the potential for unwanted (side) effects with any medications. Even headache medication comes with a long list of potential side. So how are side effects determined? The list of side effects on the product information inside your medication packaging is determined during clinical trials. Participants in trials are monitored and regularly asked to report all symptoms they experience. At this stage, neither the participant nor the doctor knows if the person is on the real (active) drug or the placebo. All the reported symptoms are recorded, and a list of side effects are developed, even if just one of the participants suffers a particular side effect, and without knowing if they are in the active or placebo group. So, while there are certainly more common side effects, there are also ones listed that you may not experience.

Anticholinergics

We did not dedicate an article to anticholinergics in this issue, primarily as it is a medication that is not as utilized today. First used for in the 1900s, anticholinergics work by blocking acetylcholine, a chemical in the brain whose effects become more noticeable when dopamine levels drop. These medications are most useful in the treatment of tremor and muscle rigidity. While they can be helpful to younger people with Parkinson's who experience tremor; they are generally not recommended



for extended use in older patients because of complications and serious side effects (including confusion and hallucinations).

Parkinson disease is a **“riddle wrapped in a mystery inside an enigma”**. It presents and progresses differently for different people, and the treatment of Parkinson's is no different. There is no magic bullet, “perfect” or one-size-fits-all treatment option for Parkinson's. Rather, just like we do with support, education, active and outreach programming at Parkinson Association, treatment options are tailored to you and your-specific symptoms and needs.

While we know we can't possibly cover every aspect of this very broad topic, we hope you find this issue informative and are excited to let you know that our Fall issue will be Treatment Options Volume two – where we will cover surgical treatments as well as alternative medication delivery options in more depth. In this issue we have also included a useable version of a medication reminder that you may find helpful. We are happy to send an electronic version your way so you can type in your own medication, dosage, descriptors and timing. Send us an email at clientservices@parkinsonassociation.ca.

References

¹ Spindler M, Tarsy, D. *Initial pharmacological treatment of Parkinson disease*. Retrieved from (last updated 2019-11-20) <https://www.uptodate.com/contents/initial-pharmacologic-treatment-of-parkinson-disease#references>

² Münchau A, Bhatia KP. *Pharmacological treatment of Parkinson's disease*. *Postgraduate Medical Journal* 2000; 76:602-610.



HOW MEDICATION WORKS



**The Right
Dose at the
Right Time**

Written By: Brett LeClaire

The majority of people, at some point in their lives, will need to take medication. Some for only a short time, and for others (like those with Parkinson disease) it will be a lifelong journey. It is important to note that everyone is unique (especially those with Parkinson's), they will take different medications and/or doses, and experience benefits and side effects differently.

As Parkinson disease is progressive the need for medication will change over time to help manage symptoms. So, it becomes integral to understand how medication works in our bodies so you can make sure you are getting the most out of each dose you are taking.

Medications can be introduced into the body in several ways including (but not limited to):

- » **Orally** (taken by mouth and swallowed)
- » **Intravenously, intramuscularly, subcutaneously, etc** (via injection)
- » **Sublingually** (under the tongue)
- » **Transdermally** (through the skin via a patch)

In this issue of the magazine, we are primarily addressing oral medications and as such will focus on that aspect of how medication works.

How does oral medication move through our body?

When you take most oral medications, the process starts with swallowing the medication in the common form of tablets, capsules, or liquids. For some medications, absorption may begin in the mouth and stomach; however, most medications are usually absorbed in the small intestine. Medication moves down the throat and into the stomach where it starts to get broken down. It then moves into the small intestine where it is absorbed and transported via the bloodstream to its target site.

For levodopa specifically there is another unique step – it must cross the blood-brain barrier before it is finally converted into the dopamine that the body needs. The blood-brain barrier is like a protective shield for the brain, made up of tightly packed cells that prevents harmful substances from entering our most vulnerable piece of our body. Since dopamine is a chemical that cannot go across this barrier, Levodopa is used to trick the barrier into letting it

through. Other medications also use different tricks to move across this barrier so that the medication can reach its needed destination in our brains.

Can anything effect my medication?

The answer is a resounding YES! Things that can affect your medication can typically be divided into two categories – 1) your body throwing up its own roadblocks, and 2) medication adherence. Let's start with the roadblocks.

Our bodies are very complex, and many pieces need to come together to effectively utilize our medications. There are things that can restrict the effectiveness of your doses and stop you from getting the help with your symptoms from the medication. Some of these include (but are not limited to):

- » **Your genetic makeup** can affect your response to certain medications or impact the way the body metabolises medications.
- » **Medication delivery** can be affected by the pH balance of the environment in which it occurs. The pH is a measure of acidity or alkalinity and can vary depending on the tissue, organ, or cell type being targeted for drug delivery.
- » **The intestinal walls and liver** chemically alter (metabolize) many medications, decreasing the amount of medication reaching the bloodstream.
- » **Constipation and other gastrointestinal issues** can decrease or limit the absorption rate of medication.
- » **The slowing down of your digestive track** (as it happens in Parkinson's) can also impact the efficacy of medications.
- » **Food and other drugs in the digestive tract** may affect how much of and how fast the drug is absorbed when a medication is taken orally. This is why some drugs should be taken on an empty stomach, others should be taken with food, others should not be taken with certain other medications, and still others cannot be taken orally at all.

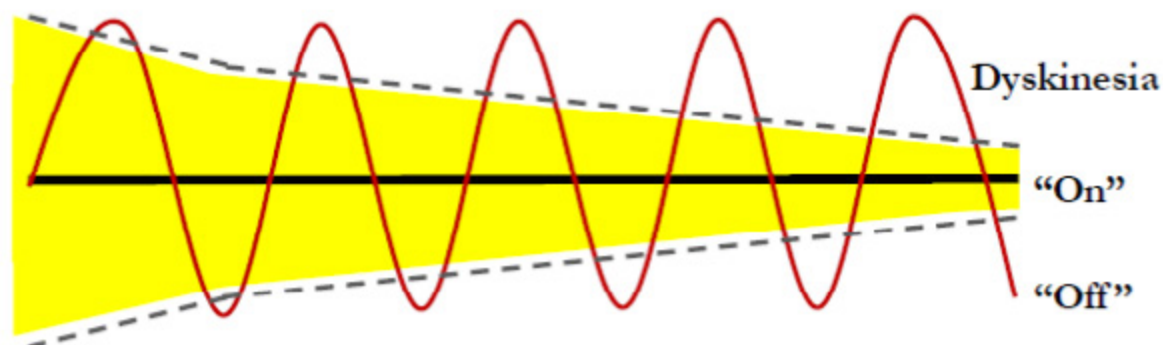
The other part of this is medication adherence. Did you know that according to research only about 50% of medication is taken as prescribed? With people often taking less (or more) than they need, taking it with (or without) something that may or may not be

beneficial, or taking it at random times, or leaving big gaps between doses – all of which can weaken effects.

- » **Taking too much or too little** of your prescribed medication can lead to a host of issues – too much can increase side effects and adversely affect health outcomes; too little and you won't have the right amount of medicine in your body at the right time to manage your illness or condition.
- » **Food, beverages, and other substances** can interact with medication metabolism and absorption, which can enhance or interfere with the effectiveness of the medication.
 - *For some people (but not all) protein can affect medication absorption. The body readily recognizes and wants protein to sustain one's systems and so it often will choose to break down and intake it over medications.*
 - *Dehydration can change how your body reacts to medication.*
 - *The body may metabolize medications differently when other substances, like caffeine, alcohol, or compounds from tobacco smoke are present.*
- » **Timing** is the number one thing that can affect our medication.



THERAPEUTIC WINDOW



Durrough and Dygulski | 2016

It takes time for your body to transport the medication to where it needs to go and be effective; if your timing is off or erratic you may not be experiencing the most optimal effects and/or see symptoms returning prior to the release of your next dose. Further, missing a dose can have a lasting effect where the benefit you receive from your medication is negatively impacted for the next day or two.

Now these are not the only things that can influence the effectiveness of your medication; the progression of Parkinson's, stress, other medical conditions, and other medications can all change/impact how your body reacts with taking medication so make sure to be aware of how you are feeling, and your body is reacting before and after taking your medication(s). If you feel your medication may not be addressing your issues speak with your health care team to help get you back on track.

Right dose, right time – why timing is SO important when it comes to Parkinson's (and other) medications.

Now that we've explored how medication moves throughout your body and the role played by the small intestine in absorbing medications, it is important to talk about how medication works once it is absorbed into the body. Typically, we are told by our doctors and/or pharmacists when to take our medication and I bet you have heard members of your healthcare team say something along the lines of "take your medication on time every time". What we may not be aware of is

WHY it is so important. Well we know that everyone's experience with taking medication is a little different; and we know that medication takes time to absorb and move through our system; and we know that benefits last only so long per dose. This "cycle" (as it relates to Parkinson disease) is what is referred to as going between on times or off times. On times is where your medications are effectively treating your symptoms and the medication is doing its job. And when your medication has worn off and you are in need of your next dose it is referred to as your off time. Because it takes time for a pill or tablet to make it to your small intestine then your brain, you need to be taking your medication at the directed times so that you can actively aim to be in an "on time" more consistently. This becomes your "goldilocks zone" often referred to as the therapeutic window. This is where the medicine works just right keeping you in an "on" time without causing troublesome side effects such as dyskinesia. This window can lessen over time as Parkinson's progresses and more medication is needed to help alleviate your symptoms. Finding the right amount of medication becomes more difficult and makes finding that perfect balance harder. This means that the decrease in your therapeutic window does not come from a resistance or "tolerance" to the medication but from a combination of progression and the subsequent increase in medication needed to balance out increased symptoms.

Knowing how medication works in your body has hopefully grown your understanding of the importance of timing, consistency, and whole-body health when it comes to receiving the best outcomes from your medications.



Most people impacted by Parkinson's are familiar with dopamine...or the lack thereof. But for those who may be unfamiliar, dopamine is a neurotransmitter and hormone made in your brain. It plays a significant role in many of our body's functions including (but not limited to) movement, mood, motivation, decision making, and more. For reasons we don't fully understand, people with Parkinson disease slowly lose the ability to produce dopamine. And, when enough of those dopamine-producing cells have died or become impaired (typically around the 80% mark) symptoms of Parkinson's develop. The solution may seem clear – just take dopamine. Unfortunately, dopamine cannot be given directly as it is unable to enter the brain/cross the blood-brain barrier. This is where levodopa or L-Dopa (as it is also known) comes into play.

Developed in the late-60s Levodopa is considered one of the most important breakthroughs in the history of medicine. Levodopa is widely considered the "gold standard" or "first-line" and most effective medication for treating Parkinson disease. It is an organic compound that is absorbed into the blood (via the small intestine), passes into the brain, and is then converted into dopamine. Levodopa is almost always combined with either carbidopa or benserazide; both of which help prevent the breakdown of levodopa in the bloodstream so more can get into the brain and changed into dopamine. Both also may also lessen some of the side effects that can accompany Levodopa (more on that in a little bit). Levodopa/carbidopa may also be combined with entacapone, a COMT inhibitor (more on those on page 14). In Canada, Levodopa is available in tablet, capsule, intestinal gel, and solution forms (more on the latter two in our Fall issue).

Levodopa (and it's / carbidopa or / benserazide companions) can be prescribed on their own, or with other medications such as dopamine agonists, MAO-B inhibitors, etc to enhance effectiveness and/or address a variety of PD symptoms.

How Does it Work? Is it Working?

The main action of levodopa is as a dopamine replacement agent. Levodopa doesn't slow down or cure Parkinson disease, but it can help control symptoms that make it hard to move. It is best at treating motor symptoms in Parkinson's like bradykinesia (slow movement), and rigidity/stiffness, and can also be beneficial for some when it comes to tremor. Levodopa will not "erase" these symptoms, rather allow for less stiffness or rigidity and a person may report it feels a little easier to move.

These medications are usually started at smaller doses and are slowly increased. This is done to help prevent possible side effects, though that isn't always the case. It does take the brain and body some time to adapt to the medications, so it is not uncommon for your medication schedule to increase slowly over a couple weeks. Sometimes a newly diagnosed person doesn't feel the effect, in fact most people report "I don't notice much difference." However, a true evaluation of the medication's effect can be observed and understood by a health care professional doing a neurological exam. A comparison from before you started taking medication to being on medications does provide the examiner with evidence of the effect. If you have had Parkinson's for a while, you have likely experienced fluctuations and may be able to feel/notice when you are ON vs OFF, or the difference when medication adjustments are made.

As Parkinson's progresses overtime it can feel like the levodopa is not "working". Rest assured; the levodopa is working, it is just that over time, people with Parkinson's will need to take more levodopa. This is due to the progression of the disease rather than medication's effects diminishing.

Levodopa/Carbidopa	<p>This medication is taken orally, is available in different strengths, and comes in both immediate- and controlled-release (CR). The difference is that the CR pills have a coating on them which prevents them from breaking down quickly. Because of the coating, these pills should not be broken or crushed. It is important to note that due to the coating, the CR version is not as easily absorbed in the gut; making the medication effect sometimes harder to distinguish and/or inconsistent.</p>
<ul style="list-style-type: none"> » Tablet <ul style="list-style-type: none"> ○ Sinemet ○ Levocarb 	<p>It is important to know that there are often numbers imprinted on the tablet(s) - this number is related to the manufacturer, NOT the dose or strength of the medication.</p>
<ul style="list-style-type: none"> » Intestinal gel <ul style="list-style-type: none"> ○ Duodopa 	<p>This medication is delivered via a surgical pump system directly into the small intestine.</p>
<ul style="list-style-type: none"> » Solution <ul style="list-style-type: none"> ○ Vyalev 	<p>Foslevodopa/Caribdopa is a soluble formula of levodopa/ carbidopa. This medication is delivered subcutaneously (under the skin) via a non-surgical pump system.</p>
Levodopa/Benserazide	<p>This medication is taken orally and comes in different strengths. It is important to note that with the capsule formulation, the medication cannot be broken or chewed. It is NOT recommended to open the capsule and consume only the contents.</p>
<ul style="list-style-type: none"> » Capsule <ul style="list-style-type: none"> ○ Prolopa 	
Levodopa/Carbidopa with Entacapone	<p>This combination medication contains dopamine replacement and a COMT inhibitor in one tablet. It comes in different strengths, shapes, and sizes (depending on the dose). This medication is coated and should NOT be broken in half.</p>
<ul style="list-style-type: none"> » Tablet <ul style="list-style-type: none"> ○ Stalevo 	

Side Effects

A side effect is an unwanted response to a medication when it is taken in normal doses. Side effects can be mild or severe, temporary or permanent. As with any other medication, there is the potential for side effects. A reminder that side effects will vary from person to person. The some of the side effects of levodopa (and its varying combinations) include (but are not limited to):

- » Nausea and/or vomiting
 - This is often lessened when levodopa is taken combined with carbidopa or benserazide
- » Dizziness/lightheadedness
- » Loss of appetite
- » Confusion (typically in older individuals)
- » May cause saliva, urine, or sweat to turn a dark color
- » Dyskinesia (involuntary, erratic movements) may occur - Major risk factors for developing dyskinesia include higher levodopa doses, younger age at diagnosis and longer course of disease.

If you experience nausea with levodopa, taking your pills with food can sometimes help to reduce feelings of nausea. Sometimes the nausea will go away once your body gets used to taking the medication. For some (but not all) people, protein seems to interfere with the way levodopa works. The protein may affect how well the drug is absorbed by the body. If this is true for you, you may benefit from taking your medication 30 minutes before a meal that contains protein.

Levodopa (and its varying combinations) remains the most effective medication for treatment of the motor symptoms of Parkinson disease. If you have any questions or concerns, never hesitate to ask your doctor or pharmacists about your medication.

PROGRAM NEWS & UPDATES

Speech Practice Group

Join the group on Zoom on Mondays, to improve your speech, and strengthen your voice projection. The more you practice, the more it will help your ability to communicate and socialize with family and friends.

Care Partner Support Program

This program aims to help Care Partners navigate their own Parkinson's journey, prevent burnout, connect to support & resources, and provide a safe and non-judgemental space to share and discuss.

Transition to Care Program

This program is for Care Partners with a loved one who is in or transitioning into care and will provide guidance and help you develop skills to navigate this stage in your Parkinson's journey.

Please visit parkinsonassociation.ca or call **1-800-561-1911** for more information on these, and our other programs, or to register.

WHATS
NEW?



Important Dates to Remember

September 7th & 8th

Step 'n Stride walk events across Alberta

September 14th

Step 'n Stride walk in Yellowknife

September 20th-22nd

2nd Annual Parkinson's Wellness Retreat in Canmore

All PAA Offices closed on the following dates:

July 1

Canada Day

September 2

Labor Day

August 5

Heritage Day

September 30

Truth & Reconciliation Day

 Parkinson
Association of Alberta

WELLNESS
RETREAT

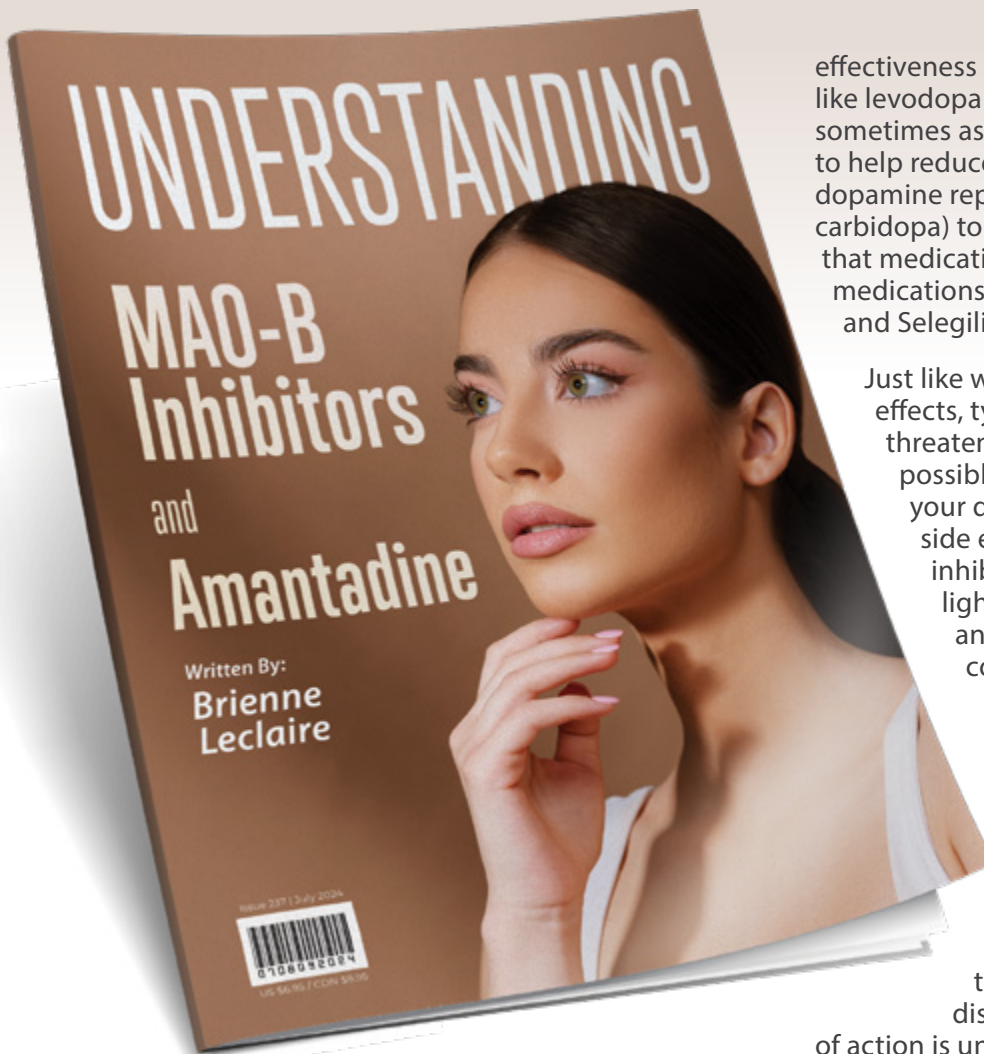
EDUCATIONAL, OUTDOOR AND
SOCIAL ACTIVITIES FOR PEOPLE
WITH PD AND THEIR CARE
PARTNERS.

EARLY BIRD PRICING!
MEMBERS SAVE \$100
UNTIL AUGUST 15

SEPTEMBER
20 - 22
CANMORE



FOR ALL THE DETAILS, CALL 1-800-561-1911
OR VISIT PARKINSONASSOCIATION.CA



effectiveness of dopamine replacement medications like levodopa carbidopa. MAO-B inhibitors are used sometimes as an early intervention in Parkinson's to help reduce symptoms. They are also used with dopamine replacement medications (ie: levodopa carbidopa) to help increase the amount of time that medication is effective for. MAO-B inhibitor medications in Canada include Rasagiline (Azilect) and Selegiline (Eldepryl).

Just like with any medication there can be side effects, typically, these are mild and nonlife threatening. It is important to be aware of possible medication side effects and speak with your doctor if you are experiencing medication side effects. Common side effects of MAO-B inhibitors include mild nausea, dry mouth, light-headedness, and constipation. Rare and more serious side effects may include confusion, hallucinations, and anxiety.

Amantadine

Amantadine hydrochloride is a member of the adamantanamine class of medications. It was originally (and still is) used as an antiviral for the prevention and treatment of influenza but was coincidentally found to improve the symptoms of Parkinson disease. Although its precise mechanism of action is unknown, doctors believe it may work by increasing the amount of dopamine in certain parts of the brain. This may be how it helps reduce dyskinesias (involuntary movements) a side effect some people experience from dopamine replacement therapies. Amantadine has historically been used in Parkinson's treatment to reduce tremor. It is occasionally used in the early stages of Parkinson's on its own to reduce motor symptoms – again, predominantly tremor. In recent years amantadine has also been utilized to reduce dyskinesias (involuntary movements) that occur with dopamine replacement medication. There are three brand names you may see Amantadine sold under: The generic is just called Amantadine; the brand names are ODAN-Amantadine and PDP-Amantadine.

Just like MAO-B inhibitors, there can be side effects while taking Amantadine. Common side effects include dizziness, low blood pressure, nausea, insomnia, confusion. Rare and more serious side effects include paranoia, aallucination, urinary retention (where the bladder is not fully emptying), and livedo reticularis, a lacey, purplish discoloration of the skin on the legs with some leg swelling. This occurs in less than 1% of people with Parkinson's who take this medication. Speak with your doctor if you are experiencing side effects.

As you know, or have likely gathered from this issue there are a variety of medications a person may take when they have Parkinson disease. MAO-B inhibitors and Amantadine are two such medications that might be a part of your Parkinson's treatment right now or in the future. In this article we'll learn a little bit more about them.

MAO-B inhibitors

Let's start by talking about what MAO-B is. In the very simplest of terms, Monoamine Oxidase B (typically referred to as MAO-B) is an enzyme that is involved in the breakdown of dopamine (and other chemicals) in the body. As dopamine is crucial for muscle movement, mood, cognition having something interfere is not ideal. Both Parkinson disease and Alzheimer's are associated with increased levels of MAO-B in the brain.

MAO-B inhibitors work by stopping MAO-B from doing its job (of breaking down dopamine and other chemicals) in the body. Taking MAO-B inhibitors helps to slow down the degradation of dopamine, bolstering its levels in the brain. In turn this can help people with Parkinson's reduce symptoms and improve the



Catechol-O-methyltransferase (COMT) is one of several enzymes vital for breaking down (degradation) catecholamine neurotransmitters. Catecholamines, including dopamine, epinephrine, and norepinephrine, are the main neurotransmitters that facilitate a variety of central nervous system functions, such as motor control, cognition, emotion, and memory processing. You may be wondering why on earth would the break down of these important neurotransmitters be a good thing? Well, to function efficiently the brain requires signaling by neurotransmitters and catechol-O-methyltransferase helps adjust and maintain appropriate levels of these neurotransmitters in the brain. It's like the janitor of the neuro system keeping things in order. Unfortunately for people with Parkinson's this "janitor" can often do too good of a job and breaks down levodopa in the bloodstream before it can enter the brain, this is where COMT inhibitors come in.

By impeding catechol-O-methyltransferase, COMT inhibitors prevent the breakdown of levodopa so that more can cross the blood-brain barrier and be converted into dopamine. Over time people with Parkinson's may experience less effect from their dopamine replacement medications (levodopa combinations). COMT inhibitors can extend the effectiveness and possibly lower the dose of dopamine replacement medications. In fact, this medication is

primarily used when one's dopamine replacement medication is not working for long enough and starts to wear off between doses. It helps to extend the "ON" time and possibly to help with wearing off.

Common side effects of this medication include:

- » Reddish-brown colored urine
- » Abdominal, back, and/or joint pain
- » Nausea
- » Dyskinesia (uncontrolled movements)
- » Diarrhea (if this happens the medication is recommended to be stopped as this side effect rarely gets better or goes away)
- » Possible confusion

In Canada, COMT inhibitors are branded as Comtan or Entacapone and come in a coated, tablet form. As with other coated medication, these pills should NOT be broken or cut. And, as they are essentially useless on their own, COMT inhibitors are always taken at the same time as one's dopamine replacement medication. As indicated in the article on levodopa in this issue, there is a dopamine replacement medication available (Stalevo) that comes with a COMT inhibitor already incorporated in it.



Medication and exercise are two of the most important pieces when it comes to living well with Parkinson's. Managing your medications effectively and taking them as prescribed is one of the biggest assets in the management of Parkinson's symptoms. BUT...

As many of you already know, managing Parkinson's medications can be challenging at times. Multiple medications, not-so-flexible timing, weird intervals, and different doses can leave a person feeling overwhelmed or frustrated at times. How often do I have to take the medication? What's the dose? Have there been changes in my medication regime? Did I take the right one? Have I remembered to take them on time?

It's a lot! So, let's look at some ways that can help streamline the management of your medications to help you take them as efficiently and effectively as possible.

On Time, Every Time - Consistency is Key

Consistency plays a large role in getting the most out of your Parkinson's medications. Medications taken as prescribed and on time each day optimizes your medication's effectiveness (and help you better notice when things aren't working as well). Missed or late dosages can lead to less optimal symptom management and give the impression that your

medication is not working properly. Late and/or missing doses can also throw your system off and that can take time to restabilize, it could take hours or even days. There are many strategies that can be employed to help you manage your medications as effectively as possible.

Organization

Creating a routine helps form consistent habits and helps que us to do specific tasks like take medication. Your routine will be unique to you and your medication needs. You may find it helpful to map your daily routine (including medication timing) out on paper to see a visual representation of your day. Managing multiple medications can be tricky and mixing them up can impact how your medications are working and managing your symptoms. Keeping an up-to-date medication list (including timing) can help keep your medication organized and ensure you are following your most current medication regime. Safely disposing prescription medications you are no longer taking can help reduce confusion.

Storing your medications in a way that keeps them organized and readily available is beneficial for

taking them both properly and on time. Let's look at some of these options. First up is the traditional storage containers commonly called pill/medication organizers. These are typically set up to be a day, a week, or a month's worth of medication. What works for you might depend on how often you take medication, how much medication you take, and/or your personal preferences. There are a variety of options when it comes to these medication organizers can be found in pharmacies, the pharmacy/healthcare department of box stores, online stores like amazon, and home health stores. Look for ones that have enough slots for how many times a day you take medication. If you cannot find one that fits your schedule you can get a little crafty and make your own.

If you are out and about you may want extra medication on hand with you just in case. There are a variety of options for small, portable cases to store small amounts of medication. These come in a variety of sizes and styles and are often small round or square boxes with one or two compartments. There are also wearable options in the form of pendants that can hold a few pills as well. Like the other pill containers these are often found in the place as the traditional medication organizers. Another great option are blister packs prepared by your pharmacy. Blister packs are a safe, reliable, and convenient way to make sure you're taking only the required amount of medication each day. Each set of medication is packed together, separate from all the others, and are easy to pop-out as you need them. These are made specifically for you and can help ensure you're getting the right medication at the right time.

Reminders

If one is navigating Parkinson's solo and/or is having trouble remembering when or if they took their medication; reminders are a good tool to provide an assist. From checking off your daily to do list to setting cell phone alarms to remind you to more advanced technologies there are a variety of options to help you.

Alarms are a great way to remind you to take your medications on time by providing an auditory cue or physical cue like a vibration. A lot of our clients use clock/alarm settings on their smartphones (iPhones, Androids, etc.) to set their daily reminders. This technology can be programmed to repeat daily so you can set reminders and change them when your

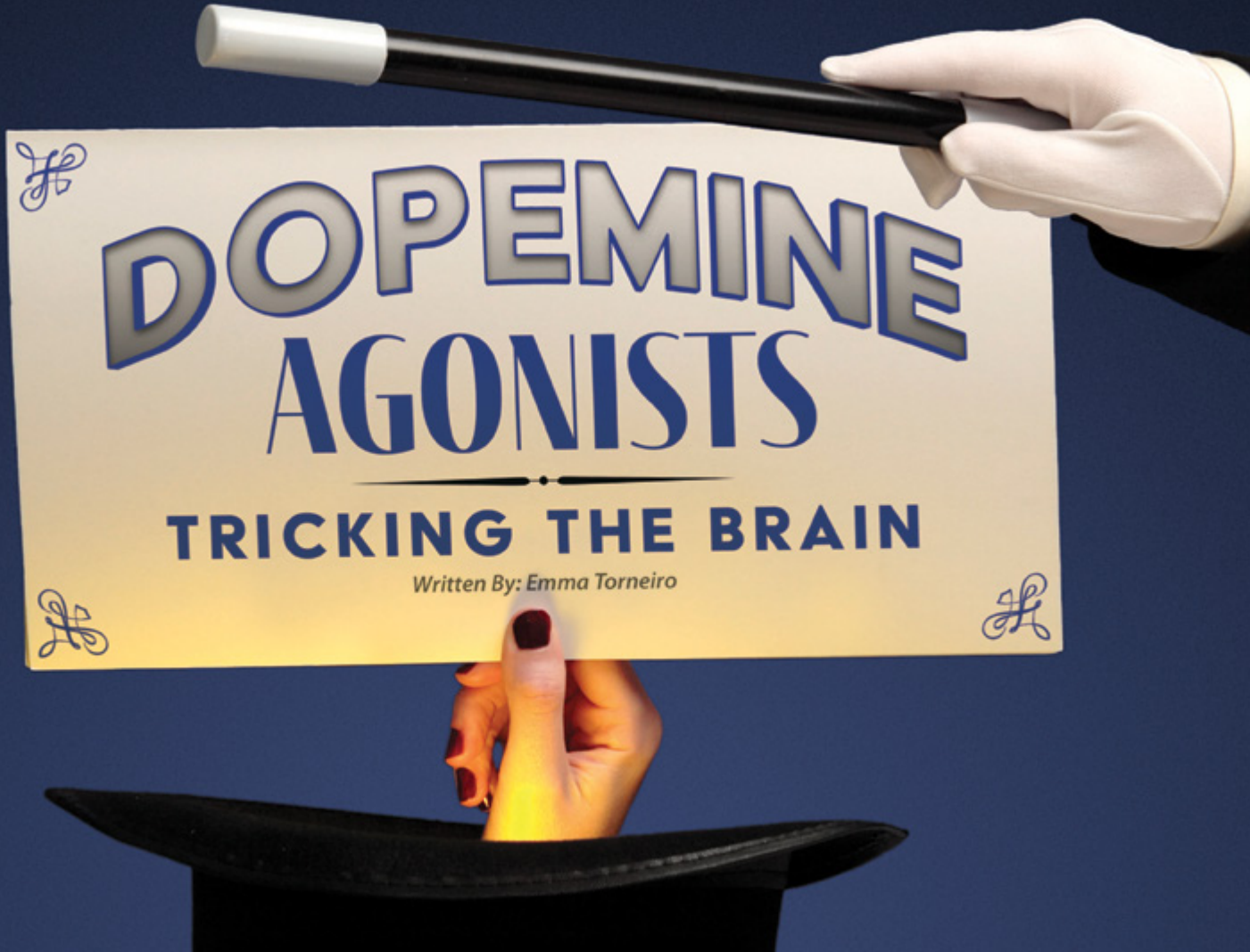


schedule changes. This also goes for smart watches like Fit Bits and Apple watches. A more low-tech option could be to set a reminder on an alarm clock, your stove or microwave – though this option does limit you to your home. Finally pill dispensers are a great option combining a medication organizer and a reminder/alarm/dispensing system. These range from fully automated dispensers to smaller handheld dispensers with timers and alarms. This option can be beneficial for those who may be on their own or are struggling to manage medications.

Storing Medications

Another part of managing medications is being aware of factors that can affect your medication physically. Things like humidity, heat and sunlight can cause your medication to crumble or become powdery which can reduce their effectiveness. This can happen when the weather outside is hot and/or humid (at home or on vacation), if you leave pills out or in an open container, or store them somewhere like a pocket, by the stove or in a bathroom. Storing your medication in a cool dry place can help prevent this from occurring. Keeping medications in their original container or in well sealed containers (blister packs, pill organizers) can help reduce the risk of environmental factors impacting your medication. Adding cotton balls to help absorb humidity in high humidity environments can also help.

Medications, and the timing of medication are vital to maintaining consistency and good quality of life with Parkinson's. It can be tricky to find a routine/system that works best for you. Trying out different options to find the best fit for you can help you better manage your medications so that you can get the most out of them and get the best symptom relief.



Trick or Treat! When we hear these words, we commonly think of the Halloween tradition of trick-or-treating in costumes for candy; now you're probably asking how it relates to a type of Parkinson's treatment called **dopamine agonists. Good question!**

Dopamine Agonists are little tricksters that cause the brain to think it is receiving dopamine, a treat for a Parkinson's brain. So, dopamine agonists are both a trick and a treat! The agonist medication activates dopamine receptors in the brain and mimics the effects of dopamine to reduce motor symptoms of Parkinson's and can help with the management of Restless Leg Syndrome (RLS). Agonists, unlike Levodopa Carbidopa, do not need to be converted within the brain to stimulate dopamine-responding areas. The dopamine agonists that are currently available are non-ergot, meaning they create strong bonds to the D2 and D3 receptors within the brain. The five dopamine receptors each have a different function that plays an essential role in our daily lives. The D2 receptors control our locomotion (the ability to move), attention, sleep, memory, and learning. The D3 receptors are connected to cognition, impulse control,

attention, and sleep. As a result, the dopamine-dependent cells in the brain react to the agonists the same way they would with naturally occurring dopamine or dopamine replacement medications, such as Levodopa Carbidopa. Therefore, agonists can be used in partnership with Levodopa Carbidopa to increase the effectiveness or minimize "off" periods, as dopamine agonists work for longer periods in the brain.

The agonist medication can also be prescribed individually as a treatment option. The formulations offered are oral pills and transdermal (delivered across the skin) patches. The type of dopamine agonists available in Canada include: Pramipexole (Mirapex®), Ropinirole, Rotigotine transdermal (Neupro®) or Bromocriptine (Parlodel®).

Dopamine Agonists - Tricking the Brain

Dopamine agonists can be successful in the treatment of the motor symptoms associated with Parkinson's; however, they can also create side effects requiring care and support from your healthcare team. The side effects, which will vary for each person, can include issues with sleep, cognition, non-motor, autonomic dysfunction, and/or physical symptoms which are listed below:



- » Excessive daytime sleepiness
- » Sleep attacks (falling asleep without warning)
- » Visual hallucinations, delusions, or confusion
- » Mood disorders (depression and/or anxiety)
- » Orthostatic hypotension (low blood pressure, dizziness, or light-headedness)
- » Constipation
- » Nausea or stomach aches
- » Headaches
- » Leg swelling
- » Skin discoloration

Finally, the dopamine agonists can create issues with impulse control or compulsive behaviors deemed abnormal for the individual, such as excessive shopping, gambling, eating, or sexual behaviors. When assessing compulsive behaviors in yourself or your loved one, reflect on how the behavior has changed since starting the medication. For example, if you always had one small piece of chocolate before bed and now, you're having multiple pieces or bars of chocolate, that might be considered a compulsive behavior. *Now you're probably craving chocolate – I am too, but I promise there won't be any more candy or chocolate references!*

It is important to connect with your healthcare team to discuss safe usage if these side effects or behaviors occur. If your healthcare team decides to discontinue use of a dopamine agonist, you or your loved one could experience psychiatric or physical symptoms associated with Dopamine Agonist Withdrawal Syndrome (DAWS). Therefore, it is important to consult with your healthcare team for any decisions regarding medications.

References

Bhatia, A., Lenchner, J. R., & Saadabadi, A. (2023). *Biochemistry, Dopamine Receptors*. StatPearls [Internet]. *Biochemistry, Dopamine Receptors - StatPearls - NCBI Bookshelf (nih.gov)*

Horner, K.A., & Choi, J. (2023). *Dopamine Agonists*. StatPearls Publishing. <https://www.ncbi.nlm.nih.gov/books/NBK551686/>

Parkinson Foundation. (2024). *Dopamine Agonists*. Parkinson Foundation. <https://www.parkinson.org/living-with-parkinsons/treatment/prescription-medications/dopamine-antagonists>



PRESENTED BY:



2024 TOOK IT BY THE WHEEL



Cars for a Cause 2024 was a success! Showcasing almost **200** classic and collector cars, great food, vendors, entertainment, dozens of exciting raffle prizes, and beautiful, sunny skies. **More than 200 people** of all ages took in the event! We could not have had such a great day without your involvement and generosity.

Thanks to your participation and endless support, we **raised nearly \$10,000** for Parkinson Association of Alberta, all of which helps support those living with, or loving someone with Parkinson disease in Alberta.

Thank You **FOR YOUR SUPPORT!**

SUMMER SOCIAL & KICK-OFF BBQ'S

CALGARY REGION

AIRDRIE
July 9
10:00AM

 **CALGARY**
July 19
4:00PM

COCHRANE 
July 19
11:00AM

LACOMBE
July 10
10:00AM

OLDS
July 9
1:30PM

HIGH RIVER/NANTON/OKOTOKS
July 23
1:30PM

STRATHMORE  **RED DEER**
July 4
11:00AM

ROCKY MOUNTAIN HOUSE
July 11
10:00AM

EDMONTON REGION

CAMROSE 
July 16
1:00PM

 **EDMONTON**
July 11
4:00PM

FORT SASKATCHEWAN
July 23
1:00PM

LEDUC
July 10
1:30PM


PARKLAND
July 23
10:30AM

SHERWOOD PARK
July 9
1:30PM

ST. ALBERT
July 9
10:00AM

LETHBRIDGE & MEDICINE HAT REGION

 **LETHBRIDGE**
July 18
4:00PM

MEDICINE HAT 
July 18
11:00AM



LLOYDMINSTER REGION

BONNYVILLE
July 24
1:00PM

 **LLOYDMINSTER**
July 25
4:00PM

GRANDE PRAIRIE REGION

VERMILION
July 25
10:30AM

GRANDE PRAIRIE 
July 3
11:30AM

CALL 1-800-561-1911 TO REGISTER

PARKINSON



Step 'n Stride

#UNSHAKEABLE



**10 COMMUNITIES
ACROSS ALBERTA &
NORTHWEST TERRITORIES**

CALGARY

SOUTH GLENMORE PARK

SATURDAY SEPT 7

9AM - 1PM

EDMONTON

RUNDLE PARK, ACT CENTRE

SATURDAY SEPT 7

9AM - 1PM

LETHBRIDGE

HENDERSON LAKE PARK

SATURDAY SEPT 7

9AM - 1PM

LLOYDMINSTER

BUD MILLER PARK

SATURDAY SEPT 7

9AM - 1PM

**NEW
LOCATION**



RED DEER

CANADA 150 SQUARE

SATURDAY SEPT 7

9AM - 1PM

CAMROSE

GRAND DRIVE PARK

SUNDAY SEPT 8

1PM - 4PM

COCHRANE

MITFORD PARK

SUNDAY SEPT 8

1PM - 4PM

**GRANDE
PRAIRIE**

MUSKOSSEPI PARK

SUNDAY SEPT 8

9AM - 1PM

**NEW
LOCATION**



MEDICINE HAT

ECHO DALE PARK

SUNDAY SEPT 8

1PM - 4PM

**NEW
LOCATION**



YELLOWKNIFE

SOMBA K' PARK

SATURDAY SEPT 14

1PM - 4PM

REGISTER TODAY
STEPNSTRIDE.COM

AND STEP UP WITH US
THIS SEPTEMBER