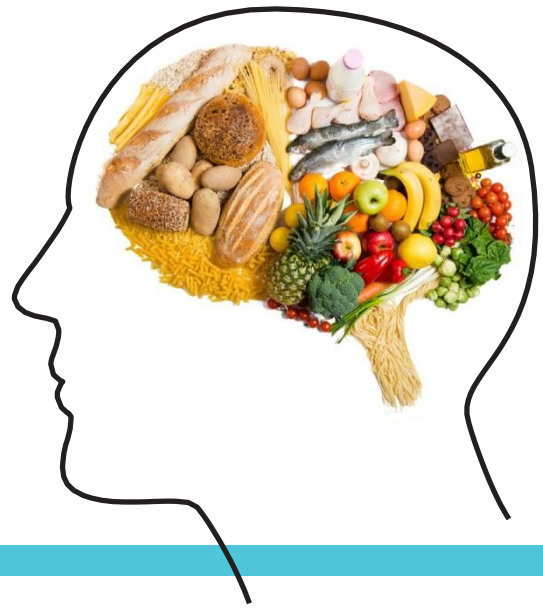


# Nutrition and Parkinson's Disease



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Nutrition in Parkinson’s Disease

While there is NO specific diet that is proven best for patients with Parkinson’s Disease (PD), this booklet discusses nutritional tips to help you navigate your disease. Always speak to your care team before making any significant changes to your diet.



6 Key Nutritional Concerns in PD

1 Eating a balanced diet

- Eating a balanced diet rich in different nutrients is important for overall health and longevity. It also addresses problems specific to PD patients: unintended weight loss (eating more calories), constipation (managing intake of fruits, vegetables, fiber and fluids) and bone health (consuming rich sources of calcium and vitamin D).
- Certain nutrients and specifically antioxidants are more powerful to nourish and protect brain tissue than others. They maintain brain function and are good at clearing out free radicals that can damage brain tissue, for example vitamin B12, B6, Thiamin, A, C, D, E, beta-carotene, coenzyme Q10, lutein, lycopene, phenolic compounds and selenium.
- Fruits and vegetable are loaded with nutrients that help strengthen your entire body. Consider including fresh, frozen and canned varieties into your diet to help you get many nutrients your body needs all year round.
- Rush has developed the “MIND” diet (page 4), which may reduce the risk of developing dementia by a third.



2 Food and drug interactions

- Nausea is one of the most common side effects of levodopa-containing PD medications. That is why your doctor may start you on a low dose of the medication or ask you to take it with food at first
- The carbidopa in the carbidopa-levodopa (Sinemet) also reduces nausea caused by the levodopa. Additional doses of carbidopa may be prescribed.
- **PD medications “compete” for absorption with iron, food and especially protein. This can affect how much medication reaches your brain.** Avoid eating protein at the same time you take PD medication. So while you might start taking your medication with food, once you are on a steady levodopa regimen, your care team will recommend you take the medication:
  - on an empty stomach when possible.
  - or only with low protein foods (fruit, vegetables).
  - 2 hours after a multivitamin with iron or iron supplement.
- That means you should try to take your medication at least 30 minutes **BEFORE** a meal or wait 1-2 hours **AFTER** a meal. Talk to your care team to find the best schedule for you.



### 3 Constipation

- Constipation can be one of the first symptoms of PD. It can get worse as the disease progresses. Constipation may need to be treated on a regular basis, like tremor, slowness and stiffness.
- Hard dry stool can lead to hemorrhoids or a dangerous bowel blockage that may require you to be hospitalized.
- It's very important to drink enough fluid and eat enough fiber every day.
  - At least 6-8 glasses of water per day
  - At least 25-35 grams of fiber per day from fruits, vegetables and whole grains. Eating prunes, prune juice or dried apricots everyday can also be helpful.
- Tell your care team if you are following these directions, but not having a bowel movement every 1-2 days. Over-the-counter stool softeners and laxatives are often necessary to treat constipation in PD.

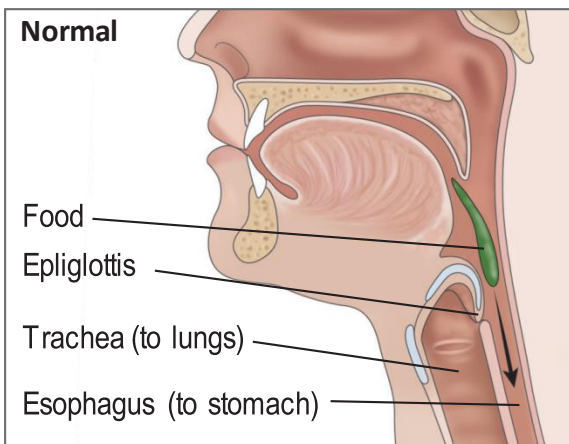


### 4 Swallowing difficulties

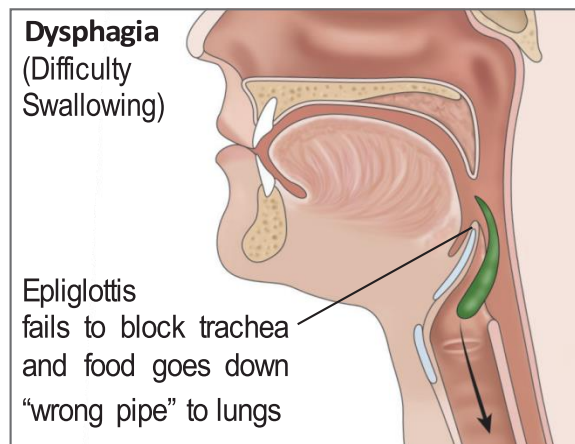
- Changes in swallowing can happen with aging. But as PD progresses, swallowing muscles of the throat and face can slow and even shrink.
- Aspiration is when liquids or food “go down the wrong pipe” into the lungs. This can be silent, without coughing or choking. Aspiration pneumonia can be serious and lead to hospitalization.
- **Even slight swallowing difficulty can be made significantly worse if you drink or eat TOO FAST – just slowing down can make a huge difference.**
- Take small sips of liquids. Your liquids may need to be thickened. Take small bites of food, tuck your chin down, chew until food is fully softened or puree foods. Alternate taking small sips of liquid between bites of food to help remove particles of food in your mouth.
- Difficulty swallowing can also lead to drooling. Suck on sugar-free hard candy or discuss botulinum toxin injections with your care team.
- Ask your care team if formal swallow testing and therapy would be helpful.



Normal



Dysphagia  
(Difficulty Swallowing)

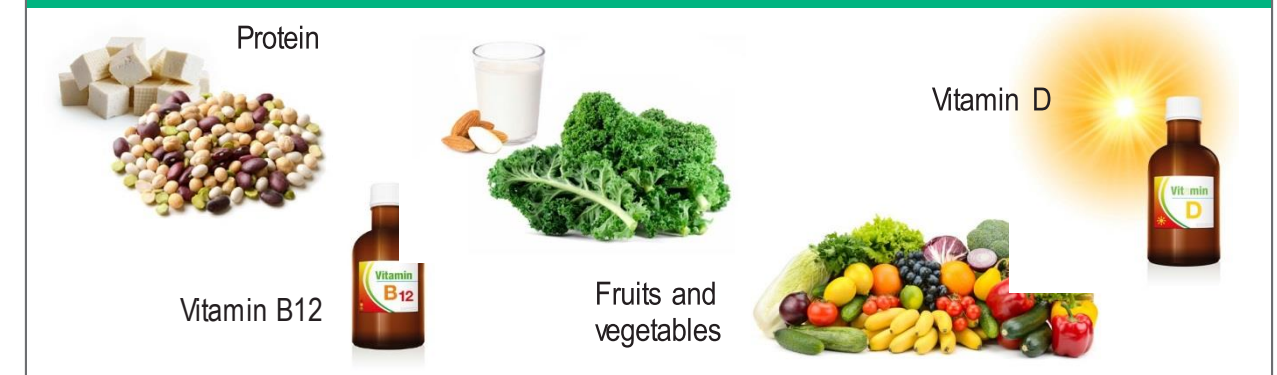


### 5 Bone health

- Key nutrients for bone health are: vitamin D, vitamin K, calcium and magnesium. Often people with PD do not have enough of these nutrients. These deficiencies increase your risk for osteoporosis (bone thinning) and broken bones.
- Daily vitamin D requirements for most adults: 600-800 IU/day. We may recommend higher doses based on your diet or individual needs if you are vitamin D deficient.
- Daily calcium requirements for most adults: 1000-1200 mg/day.
- Getting sunlight will help you get more vitamin D. However, you can't get enough vitamin D from just sunlight all year. Milk, milk alternatives and juices fortified with vitamin D and calcium are easy ways to consume more of these nutrients. **You must pay attention to meet your daily requirements every day.**
- Green leafy vegetables and dried prunes are a good source of vitamin K and magnesium.
- Weight-bearing exercise can also help reduce your risk of osteoporosis.



#### For strong bones



### 6 Unintended weight loss

- Unintended weight loss in PD could be due to loss of smell (poor appetite), nausea due to PD medications, difficulty swallowing, constipation, depression, apathy or just the disease itself.
- Weight loss can weaken the immune system, cause muscle shrinkage and weakness, increase bone loss and increase injury from falls.
- **Weigh yourself regularly.** Tell your care team if you notice you are unintentionally losing weight (>5% in 1 month and/or >10% of your body weight over 6-12 months).
- To gain weight, eat more high-calorie and high-protein foods (peanut butter, ice cream, cheese) and consider adding a nutrient dense shake or a store-bought product (Ensure, Boost).



The MIND Diet: M editerranean – DASH I ntervention for N eurogenerative D elay


- The MIND diet was developed by Rush, combining the best of the Mediterranean diet and the DASH Diet (Dietary Approaches to Stop Hypertension).
- It includes 10 brain-healthy food groups and limits 5 unhealthy food groups.
- Most excitingly, research has shown that following the MIND diet moderately well may reduce the risk of developing dementia by a third.

What to Eat		
Every day	<ul style="list-style-type: none"><li>• 3 servings of whole grains (1 serving = 1 ounce of pasta, or ½ cup of oatmeal) Look for the whole grain label.</li><li>• 1 serving of vegetables (1 serving = 1/2 cup cooked or 1 cup fresh vegetables)</li><li>• 1 glass of wine OR purple grape juice, more is NOT better! (1 glass = 5 oz = 2/3 cup)</li></ul>	 
Most days	<ul style="list-style-type: none"><li>• Leafy green vegetables (1 serving = 1 cup) Best sources: lettuce, kale, spinach, collard greens, broccoli and Brussels sprouts.</li><li>• Nuts (1 serving = ¼ cup = 1 small handful)</li></ul>	
Every other day	<ul style="list-style-type: none"><li>• Beans and legumes (1 serving = ½ cup) Low in cost and rich in nutrients.</li></ul>	
Twice a week	<ul style="list-style-type: none"><li>• Poultry (1 serving = 3 oz) Skinless breast is the healthiest</li><li>• Berries (1 serving = 1 cup)</li></ul>	
Once a week	<ul style="list-style-type: none"><li>• Fish (1 serving = 3 oz) High in omega-3 and vitamin D.</li></ul>	
What to Limit		
No more than once a day	<ul style="list-style-type: none"><li>• Butter or margarine (1 serving = 1 tablespoon) Substitute olive oil as your primary cooking fat.</li></ul>	<div>Extra Virgin Olive has been shown to promote brain health, but make sure it is fresh.</div>
No more than 4 times a week	<ul style="list-style-type: none"><li>• Pastries, sweets (1 serving = 2 cookies = 1 cupcake = 1 snack-size candy bar)</li></ul>	
No more than 3 times a week	<ul style="list-style-type: none"><li>• Red meat (1 serving = 3 oz)</li></ul>	
No more than once a week	<ul style="list-style-type: none"><li>• Whole-fat cheese (1 serving = 1 oz)</li><li>• Fried foods</li></ul>	

Reference: Morris MC et al, Alzheimers Dement, 2015.


Protein and PD


Because of levodopa, some patients with PD can be sensitive to protein, especially as their disease progresses. Protein and levodopa are absorbed into the bloodstream and carried to the brain in very similar ways. So, protein can compete with and reduce the amount of levodopa getting to the brain. Here are a few meal plans to help reduce this interaction. Remember to always discuss meal plans with your care team.




Inadequate protein intake can lead to muscle loss throughout your body. This affects your arms, legs and even your organs and muscles that help you swallow.

1. Daily protein timing plan:

  - If you are otherwise healthy, your **daily required protein is about 1/2 gram of protein per pound of your body weight.**
  - If you decide to split your daily protein requirement between your meals, we recommend you take your levodopa at least 30 minutes **before** meals or 1-2 hours **after** meals to maximize effectiveness.
  - Snacks and nutritional shakes between meals could also interfere with your levodopa. You may want to choose those that are high in calories but lower in protein unless it is necessary.
- 
2. High-carbohydrate meal plan:

  - **Eat meals that consist of a ratio of 5-7 parts carbohydrate to 1 part protein.**
  - For example, eat a meal containing: 50-70 grams of carbohydrate and 10 grams of protein. This ratio causes a lot of insulin to be released into the blood. Insulin helps remove some of the protein from the blood, which decreases the competition with levodopa.
- 
3. “Evening-only” protein plan:

  - **Eat high-protein foods only in the evening.** This maximizes the effects of levodopa and your mobility during the day.
  - Be aware that this plan could reduce mobility during the night time, which may not be ideal for everyone.
- 

- Other important details about protein:
- **Animal-based foods** (meat, poultry, fish, milk, cheese and eggs) are very high in protein and do not have any carbohydrates.
    - For many people, milk blocks levodopa more than other protein-rich foods. Try soy, almond, rice or oat milk instead. Make sure that it’s fortified with vitamin D and calcium.
  - **Plant-based protein** (beans, peas, lentils, nuts and seeds) is another source of protein and has a high ratio of carbohydrates to protein.
    - Legumes (beans, peas and lentils) have more fiber than any other food. Fiber protects your heart and helps with constipation.
    - Common plant-based protein foods include bean or lentil soup, refried beans, three-bean salad and soy patties.



Good Nutrient Sources

Calcium

**Daily requirements:** 1000 mg for most adults less than 70 years old. Women over 50 years old and all adults over 70 require 1200 mg.

- Calcium-fortified milk and milk alternatives (rice, soy, almond milk, oat milk). Use on cereal, in smoothies and in cooking.
- Other dairy products: cheese, yogurt, cottage cheese
- Calcium-fortified orange juice
- Breakfast cereals and other foods fortified with calcium

You may need to take a calcium supplement. Calcium citrate is more easily absorbed and found in over-the-counter calcium supplements. Calcium carbonate is a cheaper source of calcium and found in common antacids like TUMS.



**Caution:** Excess calcium supplementation can be dangerous. Be sure to only take in what you need. Excess in food is fine but excess from supplements is associated with soft tissue calcification and potentially severe heart problems.

Vitamin D

**Daily requirements:** For people between the ages of 50 – 70 years, at least 600 IU or 15 mcg. For people who are 71 years old and older, at least 800 IU or 20 mcg. We may recommend higher doses based on your diet or individual needs if you are vitamin D deficient.

- Vitamin-D-fortified foods: dairy products like milk and milk alternatives, fortified juice, margarine and cereals
- Fatty fish: salmon, fish liver oils
- Mushrooms: chanterelles, morels
- Eggs



Magnesium

**Daily requirements:** 420 mg for men, 320 mg for women

- Broccoli and other dark green leafy vegetables
- Dried beans, peas and soy products
- Whole grains
- Milk and yogurt
- Nuts and seeds



Vitamin K

**Daily requirements:** 120 micrograms (mcg) for men, 90 mcg for women

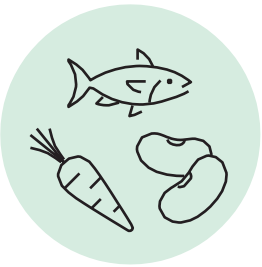
- Brussels sprouts
- Broccoli
- Lettuce
- Spinach
- Cabbage
- Chard
- Collards
- Cauliflower



Vitamin B6

**Daily requirements:** 1.3 mg for adults less than 50 years old, at least 1.5 mg for adults over 50 years old

- Eggs
- Chicken
- Fish
- Kidney Beans
- Walnuts
- Carrots
- Liver
- Peas



Vitamin E

**Daily requirements:** at least 15 mg for adults

- Nuts
- Red Peppers
- Spinach
- Avocados
- Carrots
- Asparagus
- Apples
- Whole grains
- Sunflower seeds
- Seafood
- Beef
- Oils



Omega-3 fish oils

Eicosapentaenoic acid (EPA) and docosahexaenoic acid (DHA)

**Daily requirements:** at least 500 mg for adults

- Albacore tuna
- Salmon
- Sardines
- Mackerel
- Lake trout
- Herring



Coenzyme Q10

**Daily requirements:** at least 500 mg for adults

- Beef, pork, chicken
- Sardines
- Lentils
- Mackerel
- Soybeans
- Spinach
- Cauliflower
- Broccoli
- Peanuts and pistachios
- Olives and olive oil



## Good Antioxidant Sources

## Carotenoids

- **Beta-carotene:** pumpkin, mangoes, apricots, carrots, spinach, parsley
- **Lutein, Zeaxanthin:** leafy greens like spinach, kale, collards, corn, eggs, citrus
- **Lycopene:** tomatoes, tomato products, pink grapefruit, watermelon
- **Cryptoxanthins:** red capsicum, pumpkin, mangoes
- **Saffron**

## Allium, sulfides/thiols

- Leeks, onions, scallions, garlic, broccoli, bok choy, collards, cabbage

## Flavonoids

- Tea (especially green tea), citrus fruit, red wine, red grapes, cherries, eggplant, berries, apples, onions, lentils, peas, soybeans, tofu, cocoa, chocolate and milk

## Isothiocyanates

- Broccoli, Brussels sprouts, cabbage, cauliflower, kale, horseradish

## Lignans

- Seeds (flax, pumpkin, sunflower, poppy, sesame), bran, rye, oats, barley, berries

## Polyphenols

- Beans, nuts, seeds, coffee, tea, red wine, apples, pears, citrus fruit, dark chocolate, cocoa, virgin olive oil, sesame seed oil, thyme, oregano

## Vitamins and minerals

- **Copper and Manganese:** seafood, lean meat, milk, nuts
- **Selenium:** seafood, offal, lean meat, whole grains
- **Vitamin A:** mango, cantaloupe, watermelon, tangerines, nectarines, sweet potatoes, kale, carrots, cod liver oil, eggs, fortified cereals, milk
- **Vitamin C:** oranges, black currants, kiwis, mangoes, broccoli, spinach, capsicum, strawberries
- **Vitamin E:** vegetable oils (such as wheat germ oil), avocados, nuts, seeds, whole grains, salmon, trout, cod
- **Zinc:** seafood, lean meat, milk, nuts

## Notes

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## Rush Movement Disorders Care Locations

Phone: (312) 563-2030

### Rush University Medical Center

Professional Office Building  
1725 W. Harrison St., Suite 755  
Chicago, IL 60612

### Rush Oak Park

Professional Building  
610 S. Maple Ave., Suite 5500  
Oak Park, IL 60304

### Rush Oak Brook

2011 York Rd  
Oak Brook, IL 60523

### Rush Copley Medical Center

2040 Ogden Ave., Suite 303  
Aurora, IL 60504

To learn more, ask your Neurologist for a referral for medical nutrition therapy.  
A specialized dietitian can discuss your nutritional needs.



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*The information contained in this brochure is believed to be accurate; however, questions about your individual health concerns or treatments should be referred to your health care provider.*