



Nutrition Guidelines for Patients with Kidney Disease and Gastroparesis

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Introduction

Gastroparesis means stomach (gastro) paralysis (paresis). Other terms used to describe this condition are: gastric stasis, gastropathy, slow stomach, sluggish stomach and diabetic enteropathy (in those patients who have diabetes mellitus). Under normal conditions, the stomach is a flexible sac that can stretch and shrink, mix and churn, and eventually empty food into the small intestine. The word gastroparesis is used when a patient's stomach empties too slowly. Everyone's stomach is unique, so the ability of the stomach to empty can vary from one patient to another. Some can still eat small amounts of regular foods; they just have to eat more often to get all their nutrients in. Others may have periods when all they can take in is liquids, and still others may have periods when they cannot take anything at all. Despite this most patients are able to swallow *and empty* their saliva (about 1 quart per day) and also empty the natural stomach juices they make (about 2-3 quarts per day). Symptoms can vary from week-to-week or even day-to-day.

The diet presented here is designed to give tips for diet modification. In addition, lots of suggestions are provided for foods and fluids to try when ideas run dry at home. I want to make it clear that the suggestions are based on my experience and not science, as there are no studies that have been done that demonstrate what foods are better tolerated than others by patients with gastroparesis. Furthermore, any calorie is a good calorie, especially in someone who has lost a lot of weight and is now facing the possibility of tube or IV feeding to provide nourishment. This may be a time when prior dietary restrictions are put on hold until basic nutritional needs can be met.

It is recommended that anyone with gastroparesis, but especially those with combined medical problems (such as diabetes or kidney disease) seek diet counseling by a registered dietitian to maximize nutritional benefits. To locate a registered dietitian near you, call the American Dietetic Association at 800-366-1655 or visit their website at www.eatright.org.

Essential Nutrients

What your body needs to keep you healthy:

Calories- A calorie is energy provided by food. You need calories (energy) every day for your body to work, just like putting gas in a car. If you need to gain weight, you need more calories. If you need to lose weight, you need fewer calories. Protein, carbohydrate, and fat are all different kinds of calories.

- ◆ **Protein** – protein is used by the body to make and repair all tissues; we need some every day. Most people need about 50-60 grams of protein per day to meet all their protein needs. For patients on dialysis, a higher protein intake is encouraged to replace dialysis protein loss. It is recommended to consume at least 8 ounces of lean meat per day.
Examples: meats, fish, poultry, milk, egg (see table 2)
- ◆ **Carbohydrate** (starches and natural sugars) – The energy source and one of the easiest nutrients for our bodies to use. Get some at every meal or snack.
Examples: Toast, crackers, potatoes, rice, pasta
- ◆ **Fat** – Another energy source that also provides essential nutrients to our bodies. Extra fat can help you gain weight because it is the most concentrated source of calories.
Examples: butter, mayonnaise, margarine, vegetable oil

Water or fluids – We all need a certain amount of fluid every day to make sure we are well hydrated. You can get fluid from juice, milk, water, tea, coffee, soda, and other liquids. Even if you are vomiting a lot, you need to somehow take in fluids to stay hydrated. Vomiting may actually get worse, just from being dehydrated. It is very important to monitor your fluid balance with decreased urine output. Fluid requirements vary when you are on dialysis, but usually range between 1000-1500 ml (32-48 ounces) per day.

Vitamins and minerals – vitamins and minerals are found in all different kinds of foods and beverages and are essential to us all. Most dialysis patients are prescribed a renal formulated vitamin supplement. Vitamins and minerals do not supply energy, so you still need to eat foods for energy. If you have a lot of vomiting and have lost a lot of weight, your doctor or dietitian may recommend that you have certain vitamin or mineral levels checked with a simple blood test. For patients with gastroparesis, a chewable or liquid supplement may be better tolerated.

Specific Nutrients

Patients who have had a big weight loss are at risk for multiple nutrient deficiencies. During the repletion phase, a standard multiple vitamin and mineral supplement may prove beneficial. However, this should be done under the guidance of a physician and registered dietitian. The most common nutrient deficiencies seen in patients with gastroparesis are iron, vitamin B12 (cyanocobalamin), vitamin D and calcium.

The Basics

Volume

The larger the meal, the slower the stomach emptying will be. Filling up quickly while eating but before nutrient needs are met is a real problem for people who have gastroparesis. Calorie and protein needs, as well as vitamins, minerals and fluid requirements may not be met. So, patients will need to decrease the volume of their meals, but in order to meet nutrient needs, they will have to eat more often. Smaller, more frequent meals (6-8 or more if necessary) may allow patients to better meet their needs.

Liquids versus Solids

If decreasing the meal size and increasing the number of “meals” does not work, the next step is to switch over to more liquid-type calories. Patients with gastroparesis will often tolerate liquids even if solids are not passing well. Liquids empty the stomach in a different way than solids do. Almost all liquids, even those that are high in calories, will empty from the stomach. Pureed foods practically are liquid after mixing with saliva and stomach juices, and may be more easily tolerated than their solid food counterparts. A trial of mostly liquids, followed by the addition of thinned-down pureed foods can be designed to meet a patient’s nutritional requirements. Patients, who experience increasing fullness as the day wears on, may want to have their solid food for breakfast, switching to liquid meals as the day progresses. However, keep in mind that careful monitoring of fluid status is important when incorporating mostly liquids into the diet.

Fiber

Fiber (found in many fruits, vegetables and grains) may act to slow stomach emptying in some patients and fill them up so quickly that, nutrient needs may not be met. For patients who have had a bezoar (similar to a hair ball in a cat) in the past, a fiber restriction (including avoidance of over-the-counter fiber/bulking laxatives - see table 1) is worthwhile. Patients, who have require jejunum tube feedings generally tolerate fiber-containing formulas as the stomach is bypassed.

Table 1 High Fiber Foods/Medications and Those Associated with Bezoar Formation

High Fiber Foods
<ul style="list-style-type: none">• Legumes/Dried Beans (refried beans, baked beans, black-eyed peas, lentils, black, pinto, northern, fava, navy, kidney, garbanzo beans, soy beans)• Bran /Whole Grain Cereals (bran cereals, Grape-Nuts[®], shredded wheat type, granolas)• Nuts and Seeds (pumpkin seeds, soy nuts, chunky nut butters)• Fruits (blackberries, blueberries, raspberries, strawberries, oranges, kiwi)• Dried fruits (apricots, dates, figs, prunes, raisins)• Vegetables (green peas, broccoli)• Popcorn
Foods Associated with Bezoar Formation
Apples, Berries, Brussels sprouts, Coconuts, Corn, Figs, Green beans, Legumes, Oranges, Persimmons, Potato peels, Sauerkraut, Tomato skins
High Fiber Medications/Bulking Agents
Examples include: polycarbofil (Fibercon [®]); inulin (FiberChoice [®]); methylcellulose (Benefiber [®] , Citrucel [®]); psyllium (Konsyl [®] , Metamucil [®] , Perdiem Fiber)

Fat
Although fat may slow stomach emptying in some patients, many can consume fat especially in the form of liquids. Although many clinicians restrict fat, my experience is that fat in the liquid form (as part of beverages such as whole milk, milkshakes, nutritional supplements, etc.) can be well tolerated by many. To take fat out of the diet of a patient diet that is seriously malnourished is to remove a valuable source of calories. Unless a fat-containing food or fluid causes problems, fat should not be limited. It is often well tolerated, pleasurable, and it provides a great source of calories small amounts.

Dental Health
Since gastroparesis impairs the stomach’s ability to mash food and break it down into smaller sizes in preparation for absorption, the chewing of food beforehand becomes even more important. In addition, repeated exposure to stomach acid from frequent vomiting may destroy tooth enamel.

Positioning
Patients may try sitting up after meals and maybe even go for a walk depending on how they feel.

Medications
There are quite a few medications that can delay stomach emptying –ask your doctor if any of the medications you are on could be slowing down your stomach emptying.

Getting Started

- Eat at least six small meals per day; avoid large meals.
- Avoid foods high in fat or too much fat added to foods (liquid fat in beverages is often tolerated).
- Eat nutritious foods first before filling up on “empty calories.”
- Chew foods well; solid food, such as meat may be better tolerated if ground or pureed.
- High-fiber foods should be avoided because they may be more difficult for your stomach to empty or may cause bezoar formation. A bezoar is a mixture of food fibers that may get stuck in a stomach that does not empty well, similar to a hairball in a cat).

Examples of high fiber foods: All bran, popcorn, broccoli, beans (see table 1).

- Sit up while eating and for 1 hour after finishing; consider taking a quiet walk after meals.
- If you have diabetes, try to keep your blood sugar well controlled. Let your doctor know if your blood sugar runs >200 on a regular basis.

Tips for Maintaining your Diet

- Solid food is more work for the stomach to empty than liquids. On days when symptoms are worse - try taking just liquids to let the stomach rest. Any food may be used if it is liquefied, thinned, or blenderized and strained.
- Check your weight twice a week. If weight is decreasing, increase the amount of liquid supplements or caloric beverages consumed like milkshakes, popsicles, gelatin, etc. If you lose more than 10 pounds unintentionally, let your doctor know.
- At meals take pureed foods and liquid supplements before coffee, tea or soda.

Blenderized Food

- Any food can be blenderized, but solid foods will need to be thinned with some type of liquid.
 - **Meats, fish, poultry, ham:** blend with broths, water, a small amount of milk, low potassium vegetable juice, gravies.
 - **Vegetables:** Blend with water, broths, strained low potassium baby vegetables.
 - **Starches:** leached potatoes, pasta: Blend with soups, broth, milk, water, gravies; add strained baby meats, etc to add protein if needed. Consider using hot cereals such as cream of wheat or rice, grits, etc. as your "starch" at lunch and dinner.
 - **Low Potassium Fruits:** Blend with its own juice, other fruit juices, water, strained baby fruits.
 - **Cereals:** Make with caloric beverage such as whole milk, soy or rice milk, juice, Ensure or equivalent, etc., instead of water. Add sugars, honey, molasses, syrups, or other flavorings, butter or margarine for extra calories.
 - **Mixed dishes:** Lasagna, macaroni and cheese, spaghetti, chili, chop suey – add adequate liquid of your choice, blend well and strain.
- If the blenderized item comes out "lumpy", you can strain it through a fine metal kitchen strainer (get at a kitchen store, Wal-Mart, etc) or cheesecloth (a fine material available at most fabric stores).
- If you do not have a blender, strained baby foods will work and can be thinned down as needed with milk, soy or rice milk, water, broth, etc.
- Always clean the blender well. Any food left on the blender could cause food poisoning.

Getting your Calories

When getting enough calories is a daily struggle...

- High calorie drinks are better than water (provide calories **AND** fluid); use peach or pear nectar, cranberry juice, lemonade.
- Add half and half, non dairy creamer, cream or sour cream to omelettes, noodles, rice and vegetables.
- Add instant breakfast, protein powder, or other flavored powders or syrups to whole milk or juices.
- Make custards and puddings with eggs or egg substitutes (such as Eggbeaters®).
- Make milkshakes using ice cream and ready-made supplements (see page 10).

General Kidney Diet Guidelines

Help control buildup of waste products and fluid in your blood
Decrease workload of your kidneys and slow down loss of kidney function
Keep you healthy by avoiding complications.
Your dietary restrictions will depend on your nephrologists (kidney doctor) assessment.

General Kidney Diet Guidelines (continued)

1. Protein

For growth, building muscles and tissue repair

Too much protein turns into a waste product called **urea** that your kidneys cannot get rid of.

Goal: adequate protein for nourishment, but not too much (in order to avoid making too much urea).

Rich sources of protein: lean meat, poultry, dairy, fish, seafood, eggs, cheese.

Usually you will need at least 8 ounces of lean meat if you are on dialysis or 4-6 ounces if you are at the early stage of kidney disease. Ask your Renal Dietitian how much protein is enough for you.

2. Sodium

High sodium intake can increase blood pressure and fluid retention (edema).

High sodium foods: salt, canned soups, processed cheese, some canned goods, "fast foods", pickles, olives, smoked and cured foods: bacon, ham, luncheon meats.

Read labels. Choose products with less than 140 mg. sodium per serving and less than 600 mg sodium per frozen dinner.

3. Fluids

If you are on hemodialysis, it is recommended that fluid intake be limited to 1000-1500mL (32-48 ounces) per day. Count as fluid any liquid or food that melts in your mouth like ice cream, ice, Jell-O[®], pudding, broth, coffee, tea, milk.

Excess fluid in the body causes difficulty breathing, chest pain, edema, high blood pressure. Your dietitian can share tips on how to control thirst and dry mouth.

4. Phosphorus

Your kidneys may not be able to remove phosphorus from your blood.

High levels of phosphorus weaken your bones and can cause them to break easily.

Control phosphorus by:

§ Avoid high phosphorus foods: dried beans and peas, nuts, liver and other organ meats (such as: kidney, heart, etc.), pancake and biscuit mixes, "dark drinks" such as cola, Dr. Pepper[®], Hawaiian punch[®] and other phosphorus-containing liquid and powdered drinks, beer, canned salmon. Limit milk to ½ cup and cheese to 1 ounce. Obtain a complete list of high phosphorus foods from your renal dietitian.

§ Take phosphate binders **WITH MEALS** as prescribed by your doctor. Examples of "binders" are: calcium carbonate, "Tums[®]", Phoslo[®], Renagel[®]/Renvela[®], Renvela[®] Powder, Fosrenol[®], Amphojel/Alucap. Note: notify your doctor or dietitian if you switched to small frequent meals. Your phosphate binder dose will need to be adjusted accordingly.

5. Potassium

Restriction of potassium varies depending on the stage of your kidney disease and your lab results. Ask your doctor about your potassium level.

High levels of potassium can cause rapid heartbeat. In serious cases, a heart attack may occur.

Control potassium by:

Avoid high potassium foods: bananas, orange, kiwi, avocado, cantaloupe/honeydew, mango, papaya, dark green leafy vegetables (spinach), Brussels sprouts, dried beans, "salt substitutes", nuts. Leach potatoes by soaking peeled and diced potatoes overnight, boiling and draining off liquid. Limit tomatoes to 2 thin slices and milk to 1 cup. Obtain a complete list from your renal dietitian.

Do not skip dialysis.

Patients receiving peritoneal dialysis may not need to restrict potassium in their diet.

General Kidney Diet Guidelines (continued)

6. Follow a healthy diet

If you are diabetic, keep track of your carbohydrate intake.
 Include variety of allowed foods...meat, fruit, vegetables, grains.
 Choose "low fat foods".
 Portion control is important: 3 oz lean meat, ¾ plate grains/starch and vegetables, and fruit.

7. Vitamins and Minerals

Vitamins made for patients with kidney disease may be prescribed. These have vitamin C, increased levels of certain B-vitamins, and no Vitamin A. Do not take over-the-counter multivitamins.
 Iron supplements are needed to help increase red blood cells. Do not take iron with your antacids or calcium.

Other considerations:

If your doctor prescribes the drug metoclopramide (Reglan), mention to your doctor that you have kidney disease, as the dose may need to be adjusted.

DIET SUGGESTIONS FOR PATIENTS WITH KIDNEY DISEASE AND GASTROPARESIS

⚠ Important: Follow portion sizes closely to prevent high phosphorus and potassium

Dairy

½ cup of these:

Milk: skim, low fat, whole	Home-made creamed soup
Ice Cream: vanilla & other allowed flavors	1 ounce of cheese or ½ cup cottage cheese
Pudding: vanilla, rice, tapioca	
Yogurt: plain, without fruit, vanilla	

Vegetables – cooked, and if necessary, blenderized/strained

Important: Follow portion sizes closely – more than allowed serving sizes will increase your potassium

1 cup a day or ½ cup lunch and dinner

Asparagus	Endive	Peppers
Beets	Garlic	Potatoes – (peel & soak overnight; discard water. Boil 30 minutes. Discard water).
Cabbage	Green beans	Radishes
Carrots	Kale, boiled	Rutabagas
Cauliflower	Lettuce	Summer Squash
Celery	Mushrooms	Tomato – 1 small or 2 thin slices
Cucumber	Okra	Water chestnuts - 4 pieces
Eggplant	Onions	Zucchini
Escarole	Parsley	
	Peas	

Fruit – cooked and, if necessary, blenderized/strained. Without skin

Important: Follow portion sizes closely to prevent high potassium

***Canned Fruit: drain juice**

1 serving = ½ cup or 1 small piece. Limit to 4 servings a day.

Applesauce (no fresh apple)	Fruit Cocktail	Plums
Apricot, canned (limit to 2 only)	Grapes (12-15)	Strawberries
Cherries	Lemon, Lemonade, Lime	Watermelon
Cranberry Juice	Peaches, canned	Seedless jams & jellies
	Pears, canned	
	Pineapple	

Starch

1 serving = 1 slice or ½ cup. 6-8 servings a day.

Bagel – plain or egg	English Muffin
Bread – White, Italian, Rye	Hamburger or Hot Dog Buns
Cake – Vanilla, Pound, Angel Food	Graham Crackers, Animal Crackers
Cereal – Cheerios®, Cream of Rice, Cream of Wheat, Oatmeal, Puffed Rice, Puffed Wheat, Rice Krispies®, Special K®	Noodles/Pasta (plain)
Cookies – no chocolate	Pancake, Waffle (not from mix)
Crackers – <u>unsalted</u>	Pie (allowed main ingredient)
	Pretzels – <u>unsalted</u>
	Rice
	Rolls – plain hard, soft, dinner

Meats / Protein – ground or pureed, no breading

1 Breakfast, 3 Lunch, 3 Dinner

1 serving = 1 ounce, 1 egg, ¼ cup.

Recommended servings:

Patients with stage 2-4 CKD (Chronic Kidney Disease): 4-6 servings

Patients with stage 5 Dialysis: 6-8 servings a day.

Beef	Fish	Shellfish
Chicken - without skin	Game	Turkey – without skin
Egg – no creamed for fried	Lamb	Veal
Egg Substitutes	Pork	

Fat – if tolerated

Cream Cheese	Oil
Gravy – without salt, fat free	Salad Dressing – low sodium
Margarine	Sour Cream – non fat
Mayonnaise	Whipped Cream – non fat
Non-dairy Creamer	

FLUIDS

Note: Count as part of the 4 – 6 cup total allowed per day unless otherwise specified by your doctor or nutritionist.

Coffee & Tea - <u>limit to 3 cups total</u> per day	Kool-Aid® & Tang®*
Ice Cubes	Lemonade*
Italian Ice*	Plain Sherbet*
Jell-O®*	Popsicles*
Juices from allowed fruits	Soda (Gingerale, 7-up®, Sprite®)* (may cause gas or bloating)

***Avoid if you have diabetes, or use sugar free if available.**

BEWARE OF THESE FOODS:

High Potassium Foods

- Dried Fruits (prunes)
- Coconut
- Nuts (peanuts, cashews, pecan, walnuts, etc.)
- Dried Beans (kidney, limas, pinto, baked beans, black-eyed peas, lentils, chick peas, black beans, soybeans, "Pork & Beans", Tofu)
- Chocolate, Cocoa
- Tropical Fruits (mango, papaya, guava)
- Other fruits: cantaloupe, honeydew, banana, orange, avocado)
- Juices : orange, grapefruit, prune, tomato)
- Vegetables: winter squash, spinach, collard greens, brussel sprouts, artichoke
- Potatoes, Sweet Potatoes – unsoaked
- Tomato – more than 2 slices, Tomato Sauce
- Chewing Tobacco
- Coffee – not more than 3 cups
- Beer

High Phosphorus Foods

- Milk Products – limit to ½ cup
- Cheese - limit to 1 ounce
- Liver / Organ Meats
- Processed Meats (hot dog, sausage, bologna, luncheon meats)
- Sardines, Canned Salmon, Herring, Fish Roe, Anchovies
- Seeds (sunflower, pumpkin, sesame)
- "Dark sodas" and other drinks with phosphorus additives
- Biscuit or pancake from mix
- Chocolate, Cocoa

High Sodium Foods

- Salty Foods
- Dill Pickles, Olives
- Frozen or Canned Dinners
- Salted Crackers, Popcorn, Pretzels
- Salt, Bouillon Cubes, Soy Sauce, Steak Sauces, prepared Barbeque Sauces
- Canned Soups and Mixes – except low sodium

Oral Nutrition Supplements

Oral nutrition supplements must be considered when food intake is not enough to meet ones needs. *It is very important to check with your renal dietitian before obtaining supplements.* Although, the primary concern is to provide calories and protein, it is also crucial to maintain serum potassium and intradialytic fluid weight gains within acceptable range.

Oral Nutrition Supplements (continued from previous page):

Nutrition Supplements that may be Acceptable for Patients with Kidney Disease*

Company	Product Acceptable for Patients with Kidney Disease	Products with higher potassium content (consult your renal dietitian) before using
Nestle® Nutrition 1-877-463-7853	NovaSource® Renal	
	Boost® Pudding	Boost® / Boost® Plus Boost® High Protein
	Resource® Breeze® Resource® Nutritious Juice Drink	Resource Health Shake® Resource® Diabetic
	BeneProtein®	
Abbott® Nutrition 1-800-258-7677	Enlive!® Apple/Peach Ensure® Bar Ensure® Pudding	Ensure® / Ensure® Plus
	Glucerna® Meal Bar	Glucerna®
	Nepro® with Carb Steady®	
	Promod®	
Nutra/Balance® 1-800-654-3691	ReGen (Frozen) Regular Sugarfree	
	ReGen (Shelf Stable) Sugar Free	
	Protein Fortified Cookies	
Medical Nutrition USA, Inc. 1-800-221-0308	Pro-Stat®	
Llorens Pharmaceutical 1-888-324-4660	Proteinex®	

*Not a complete list; UVAHS does not endorse any one company or brand; consult your renal dietitian for more information or product ideas.

SAMPLE SEMI LIQUID MEAL PATTERN*

- **Food choices should be consistent with kidney diet restrictions**

BREAKFAST

Allowed juice or other beverage containing vitamin C
Thinned Cooked Cereal
Liquid Supplement or Milkshake (see suggestions)
Milk (if allowed)
Coffee or Tea (if allowed)
Cream, Sugar

LUNCH AND DINNER

Thinned Soup
Thinned or Pureed Meat or Substitute
Thinned starch
Thinned or Pureed Vegetable
Thinned Dessert or Pureed Fruit
Liquid Supplement or Milkshake (see table on previous page)
Allowed seasonings

SNACK: MID-MORNING, AFTERNOON AND BEDTIME

Liquid Supplement or Milkshake (see table on previous page)

RESOURCES:

- **Gastroparesis & Dysmotility Association - <http://www.digestivedistress.com>**
- **American Motility Society- www.motilitysociety.org**
- **University of Virginia Health System, Digestive Health Center of Excellence:
www.ginutrition.virginia.edu
Go to: Nutrition Articles in Practical Gastroenterology
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