



DIET INTERVENTION FOR GASTROPARESIS AND DIABETES MELLITUS

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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, or diabetic enteropathy (in those patients who have diabetes mellitus). 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 patients can still eat small amounts of regular foods, although they might need to eat more often to get in all of their nutrients. Others may have periods when all they can take in is liquids. And, still others, may have periods when they cannot eat or drink anything at all. Symptoms can vary from week-to-week or even day-to-day. Despite this, most patients are able to swallow their saliva (about 1 quart per day) and empty this from the stomach. They also empty the natural stomach juices they make (about 2-3 quarts per day).

The diet presented here provides tips for diet changes that may help to control the symptoms of gastroparesis. In addition, many suggestions are provided for foods and fluids to try when ideas run dry at home. The suggestions are based on my experience and not science (as no studies have been done that demonstrate what foods are better tolerated than others by patients with gastroparesis).

Keep in mind, for a person who is losing weight and unable to maintain a healthy weight, any calorie is a good calorie. This is particularly true in the person who is 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 seek diet counseling by a Registered Dietitian to maximize nutritional benefits. This is especially important for those with combined medical problems (such as diabetes or kidney disease). To locate a registered dietitian near you, call the American Dietetic Association at 800-366-1655 or visit their website at www.eatright.org.

Diabetes and Gastroparesis

If gastroparesis is due to diabetes, the most important goal is to achieve or maintain good glucose control. The best way to achieve this is by monitoring your blood glucose levels often and adjusting the amount of insulin given throughout the day.

In patients with gastroparesis, food intake may be inconsistent due to poor appetite, bloating, and fullness. The amount of food a patient is able to take may vary from meal to meal and day to day. Because the diabetic patient with gastroparesis is often not able to tolerate regular meals or solid foods, blood glucose levels can fluctuate throughout the day.

Also, it is common for insulin requirements to increase because of the need to add nutritional supplements.

The following guidelines may help to make sure that you are taking in enough nutrition while also keeping your blood glucose levels under control:

- Eat 5 to 6 small meals each day instead of 3 large meals. Try to keep the amount of carbohydrate at each meal about the same. The amount of total carbohydrate that the average person needs each day is about 12 to 16 carbohydrate choices (1 choice = 15 grams of carbohydrate) or 210 to 240 grams of total carbohydrate each day.

Example: If you eat six small meals each day, that would be about 2 to 3 carbohydrate choices (or 30 to 45 grams of carbohydrate) at each meal.

- If you take short or rapid-acting insulin before each meal, it is important to adjust the amount of insulin that you take before the meal based on the amount of carbohydrate in the meal. This is called an "insulin to carbohydrate ratio" and your health care provider/diabetes educator will teach you more about this. This is very helpful to keep your glucose levels within the target range after the meal (less than 180 mg/dl).

If you take 2 doses of fixed short and intermediate-acting insulin, it is even more important to keep the amount of carbohydrate at each meal about the same from day to day. This will help with blood glucose control and help to your hemoglobin A₁C at a normal level.

- If you are only able to tolerate liquids, the best choices are liquids with higher quantities of nutrients, such as milk, liquid supplements, fruit juices or smoothies. These can replace low-nutrient liquids such as regular sodas or soft drinks. The total amount of carbohydrate consumed, however, is more important than the source of the carbohydrate when it comes to controlling your blood glucose levels. Therefore, the more consistent you are with the amount of carbohydrate you take at each meal (whether in solid or liquid form), the easier it will be to maintain more stable blood glucose levels.
- Eat and drink all foods and beverages while sitting up.
- Solid foods are often better tolerated earlier in the day. Try switching to liquid meals later in the day.
- Monitor blood glucose levels before the small meal or snack is eaten and adjust insulin dose according to the blood glucose level and the amount of carbohydrate to be eaten.
- Many patients may need an insulin regimen of a basal dose of insulin (NPH or glargine) at bedtime or in the evening and a bolus or supplemental dose of short-acting (regular insulin) or rapid-acting insulin (Aspart or Lispro) with meals or snacks (some patients may need to do this about a ½ hour after their meal, once they are sure the meal will stay down) to control their blood glucose.

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 all provide calories.
- Protein - We need some every day to make and repair all tissues in the body. Most people need about 50-60 grams of protein per day to meet their protein needs. *Examples:* meats, fish, poultry, milk, egg
- Carbohydrate (starches and natural sugars) - The easiest nutrient for our bodies to digest and use for energy. Get some at every meal or snack. *Examples:* Toast, crackers, potatoes, rice, pasta, fruits and vegetables.
- 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. Being dehydrated may actually make vomiting worse.
- Vitamins and minerals - Found in all different kinds of foods and beverages and are essential to us all. Vitamins and minerals do not supply energy, so even if you take vitamins, 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. If additional vitamins and/or minerals are needed, some patients tolerate chewable or liquid forms better.

Specific Nutrients

Patients who have had a big weight loss are at risk for multiple nutrient deficiencies. To replace these nutrients, a standard multiple vitamin and mineral supplement may be 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, vitamin D and calcium.

The Basics of the Gastroparesis Diet

Volume

The larger the meal, the slower the stomach will empty. Filling up too quickly while eating is a problem for people who have gastroparesis. Patients often become full before they can take in enough nutrition. You will likely need to decrease the amount of food at each meal. However, in order to meet nutrient needs, you will probably have to eat more often. Smaller, more frequent meals (6-8 or more if necessary) may be needed.

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. Puréed foods are essentially liquid after mixing with saliva and stomach juices, and may be more easily tolerated than the same food in solid form. A trial of mostly liquids, followed by the addition of thinned-down puréed foods can be used to meet nutritional needs. Patients who experience increasing fullness as the day wears on may want to have their solid food for breakfast, then switch to liquid meals later in the day.

Fiber

Fiber (found in many fruits, vegetables and grains) may slow stomach emptying in some patients. Fiber may also make you feel full before your nutrient needs are 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) is worthwhile. See the table below for more information.

High Fiber Foods & Medication / Foods 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, my experience is that many patients with gastroparesis can tolerate some fat, especially in the liquid form. Examples include: whole milk, milkshakes, and liquid nutritional supplements. Fat is a valuable source of calories, especially for patients who are malnourished or who are losing too much weight. Unless a fat-containing food or drink causes problems, fat should not be limited. When taken in small amounts, it is often well tolerated, pleasurable, and it provides a great source of calories.

Dental Health

It is especially important for patients with gastroparesis to chew food well so it can be more easily digested. Good oral care is also important because repeated exposure to stomach acid (from frequent vomiting) may harm tooth enamel.

Positioning

Patients may try sitting up after meals, or 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 6 at least small meals per day. Avoid large meals.
- Avoid fatty solid foods or too much fat added to foods—see list of fats below (**Note:** beverages containing fat, such as milk, milkshakes, and nutritional supplements are 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 puréed.
- High-fiber foods should be avoided because they may be more difficult for your stomach to empty or may cause bezoar formation.
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 you are losing too much weight, increase the amount of liquid supplements or high calorie beverages (like milkshakes, popsicles, gelatin, etc.). If you lose more than 10 pounds unintentionally, let your doctor know.
- At meals, take puréed 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 a liquid.
 - **Meats, fish, poultry, and ham:** blend with broths, water, vegetable or V-8[®] juice, milk, tomato sauce, gravies.
 - **Vegetables:** Blend with water, tomato juice, broths, strained baby vegetables.
 - **Starches:** 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.
 - **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.
 - **Mixed dishes:** Lasagna, macaroni and cheese, spaghetti, chili, stews, hearty soups, chop suey – add adequate liquid of your choice, blend well and strain.
- If you do not have a blender, strained baby foods will work and can be thinned down if needed with milk, soy or rice milk, water, broth, etc.
- **Always clean your blender well after each use.**

Adding Protein to your Diet: Examples of Protein Sources*

Product	Serving Size	Protein (g)	CHO(g)**
High Protein Foods			
Egg Beaters [®]	¼ c	6	***
Better n'Eggs [®]	¼ c	5	***
Egg whites, separated, cooked	2	7	***
Powdered egg whites	1 tablespoon	11.5	***
Egg white (Bob's Red Mill [®])	2 teaspoon	3	***
Just Whites [®] (Deb EL [™])	2 teaspoon	3	***
Fat free luncheon meat	1 oz	6	***
Fat free milk	8 oz	8	12
Non-fat dry milk powder	3 tablespoon	10	11
Non-fat cheese	1 oz	8	***
Evaporated skim milk	½ c	9	15
Non-fat cottage cheese	½ c	13	***
Non-fat yogurt (plain)	8 oz	12	15
High protein broth (Bernard [®] 800-323-3663)	1 cup	10	27
High protein gelatin (Bernard [®] 800-323-3663)	½ cup	12	25
High protein egg whites (Bernard [®] 800-323-3663)	1 tablespoon	5	0
UNJURY [®] Unflavored Whey Protein (800/517-5111)	1 scoop	20	0
Pro-Stat [®] (Medical Nutrition USA [™] , Inc. 1-800-221-0308)	2 tablespoons	15	0
Beneprotein [®] (Nestle [®] 888-240-2713)	1 scoop	6	0

* Carbohydrate calories may be present in some of these sources

**Carbohydrate content may vary among brands and may change over time; check product nutrition labels for the most up to date nutritional information.

*** Not considered carbohydrate choices-amount of carbohydrate is minimal

Recipes and Additional Ideas

Sometimes it is hard to think of ideas when you are tired and nauseated much of the time. The ideas and simple recipes below are intended to provide some suggestions to fuel and hydrate the body when gastroparesis has you down. Remember, good glucose control is essential to not only help with nausea control, but also so the body can use the nutrition that you eat and drink.

NOTE: The nutritional information provided below is meant only as a guide. Product ingredients and nutrient content can vary among brands and change over time. Check nutrient labels for the most up to date nutritional information on a specific product.

Options while on a Liquid Diet* (1 Carb Choice = 15g)

*Carbohydrate content may vary among brands and may change over time; check product nutrition labels for the most up to date nutritional information.

Clear Liquids**	Carbs (g)
All teas and coffees (plain, no sugar)	0
Clear juices such as:	
♦ Apple - ½ cup	15
♦ Cranberry - 1/3 cup	15
♦ Grape - 1/3 cup	15
Fruit-flavored drinks (1/3 cup)	15
Carbonated beverages/soda (Regular 12 oz)	39
Carbonated beverages/soda (Diet 12 oz)	0
Gatorade® - regular	14
G2® Gatorade	5
Broth, bouillon, consume' (1 cup)	1
Plain, flavored gelatins (Regular ½ cup)	19
Popsicle® (1 piece)	11
Sorbet, (½ cup)	22
Clear liquid type supplements (see table 5):	
♦ Enlive® (Abbott) - 8 oz	52
♦ Resource® Breeze (Nestle®) - 8oz	54
♦ NUTRA/Shake® Fruit Plus (Nutra/Balance)	44
♦ NUTRA/Shake® Fruit Plus Free (Nutra/Balance)	39
♦ Resource® DIABETISHIELD® (Nestle®)	30

** Note: Clear liquids may be better tolerated if small amounts of plain rice, potatoes, saltines, etc. are taken with them (see CHO choice amount for each).

Options while on a Full Diet*

*Carbohydrate content may vary among brands and may change over time; check product nutrition labels for the most up to date nutritional information.

Full Liquids	Carbs (g)
All juices (nectars, fruit juices of any kind) – ½ cup	15
Tomato or V-8® juice – ½ cup	5
Puddings or Custard – ½ cup	24
Smooth ice cream (no nuts, chunks, etc), ½ cup	18
Hot cereal (low in fiber) such as grits, cream of wheat, cream of rice, or farina (½ cup)	19

Full Liquids (continued from previous page)	Carbs (g)
Milks	
§ Regular milk (1 cup; 1% low fat, 2% reduced fat, or skim)	12
§ Chocolate milk (1 cup; 1% low fat, 2% reduced fat)	26
§ Buttermilk (1 cup)	12
§ Lactaid® milk (1 cup)	12
§ Soy or rice milk (plain, 1 cup)	8
Carnation® Instant Breakfast™ (or other instant breakfast powder)	
§ Made with 1 cup water	27
§ Made with 1 cup milk	39
Carnation® Instant Breakfast Essentials™ Ready to Drink	34-41
Carnation® Instant Breakfast Essentials™ Ready to Drink No Sugar Added	16
CARNATION® INSTANT BREAKFAST™ NO SUGAR ADDED POWDER	
§ Made with water	12
§ Made with 1 cup milk	24
Ovaltine® (4 tablespoon with 1 cup of milk)	30
Nesquik® (2 tablespoon chocolate)	14
Nesquik® No Sugar Added (2 1 tablespoons chocolate)	7
Flavored syrups such as strawberry (1 cup milk & 1 tablespoon syrup)	25-30
Eggnog (1cup)	34-48
Milkshakes (10 oz milkshake)	varies
All tea and coffee drinks (plain, no sugar)	0
§ Add whole milk, cream or flavored creamers (1 tablespoon)	3
§ Coffee Frappuccino® Light Blended Beverage	27
Smoothies*	See below
Hot or cold cocoa (1 packet mixed with water)	22
Hot or cold cocoa (1 packet mixed with 6 oz milk)	31
Kefir (liquid yogurts), plain, 1 cup	12
Kefir (liquid yogurts), flavored, 1 cup	25
Yoplait® Go-GURT®, etc. (2.25 oz)	13
Small size yogurt Smoothie drinks (Danimals®, DanActive®, etc) (3.1 oz)	13-15
Yogurt, plain, 1 cup	12-17
Yogurt, fruited / flavored	Varies by brand
Strained cream soups (1 cup)	10
Consider adding to broth or "cream" based soups:	
§ Strained vegetables, meats (such as strained baby foods)	
§ Can also add to broths or cream soups to increase nutritional value	
§ Butter, margarine	
Sugar, hard candy, honey, syrups (1 tablespoon)	15

Examples of Commercial Nutritional Supplements

Product	Portion	CHO (g)*	Company	Website/Phone**
Ensure® Ensure® Plus Enlive®	8 oz	40-41 49-50 52	Abbott®	www.abbottnutrition.com 800-986-8502
Resource Health Shake® Resource Shake® Plus Resource Health Shake®- No Sugar Added Resource® Breeze Boost® Boost® Plus Benecalorie®	8 oz 1.5 oz	39 69 22 54 41 45 0	Nestle®	www.NestleNutrition.Store.com 1-888-240-2713 [0]
NUTRA/Shake Supreme NUTRA/Shake Sucrose Free	4 oz	32 25	Nutra/Balance Products	www.nutra-balance-products.com 800-654-3691
Scandishake®	1 envelope w/ 1 cup milk	66	Axcan Pharma	store.axcanscandipharm.com 800-472-2634
Diabetic Products: Boost Glucose Control™ DiabetiSource® AC Glucerna® Shake Glucerna® Glucerna 1.2 CAL® Glucerna 1.5® Nutren® Glytrol®	8 oz	16-20 25 27 23 27 31 25	Nestle® Nestle® Abbott® Abbott® Abbott® Abbott® Nestle®	
Slim Fast® Shake Slim Fast® Lower Carb Shake	1 can	23-25 4-6	Slim Fast®	
Milk Shake Plus	4 tablespoon with 1 cup whole milk	37	Bernard®	www.bernardfoods.com 800-323-3663

* Carbohydrate content may vary among brands and may change over time; check product nutrition labels for the most up to date nutritional information.

**Many of these products may also be sold through retail pharmacies (in store or online). Many larger pharmacy and food chains have their own brands of liquid supplements, examples include:

- ◆ Wal-Mart® = Nutritional Supplement
- ◆ CVS Pharmacy® = Liquid Nutrition
- ◆ Kroger® = Fortify® & Fortify® Plus
- ◆ Giant® = CareOne® Complete Plus
- ◆ Food Lion® = NutraFit & NutraFit Plus

Recipe Ideas For Smoothies, Fruit Blends, Shakes And Fruit Drinks* (1 Carb Choice = 15g CHO)

***Notes:** Carbohydrate content of ingredients may vary among brands and may change over time; check product nutrition labels for the most up to date nutritional information. Some recipes make more than one serving.

Basic Fruit Smoothie

Can substitute other creamy yogurt for variety

- ½ cup low fat vanilla yogurt (22g CHO)
- 1 small ripe banana (15g CHO)

(Total Carb = 37g or 2.5 Carb choices)

Pear Fruit Blend

Substitute peaches or fruit medley (if desired)

- ½ cup canned pears (in juice or extra light syrup: 15g CHO)
- ½ cup cottage cheese (2%: 4g CHO)

(Total Carb = 19g or 1 Carb choice)

Peaches and Cream

Use pears, apricots, or mix for variety

- ½ cup whole milk (6g CHO)
- ½ cup vanilla ice cream (16g CHO)
- ½ cup peach canned in juice (15g CHO)
- Almond or vanilla extract to taste

Blend all ingredients and chill well before serving.

(Total Carb = 36g or 2.5 Carb choices)

Vanilla Chiller

- ¼ cup cottage cheese (2%: 2g CHO)
- ¼ cup vanilla ice cream (9g CHO)
- ½ cup prepared gelatin (19g CHO)

(Total Carb = 30g or 2 Carb choices)

Fruity Chiller

- ¼ cup ricotta or cottage cheese (2%: 2g CHO)
- ¼ cup vanilla ice cream (9g CHO)
- ½ cup blended fruit (15g CHO)
- ½ cup prepared gelatin (19g CHO)

(Total Carb = 45g or 3 Carb choices)

Fruity Yogurt Sipper (2 servings)

- 1 ripe large banana or 2 medium peaches, peeled and pitted (30g CHO)
- 1 ½ cups whole milk (18g CHO)
- 1 cup vanilla yogurt (light: 18g CHO)
- 1 tablespoon powdered sugar (15g CHO)
- ½ cup ice cubes

Cut fruit into chunks. Combine all ingredients except ice in a blender until smooth. Add ice, one cube at a time. Blend until smooth.

(1 serving = 40.5g carb or 2 Carb choices)

Chocolate Peanut Butter Shake

- 1 can choc. Ensure[®] or Boost[®] (40g CHO)
- 2 tbsp smooth peanut butter (6g CHO)
- ½ cup vanilla ice cream (18g CHO)

(Total Carb=64g or 4 Carb choices)

High-Protein Shake

- 1 cup fortified milk (12g CHO)
- ½ cup ice cream (18g CHO)
- ½ teaspoon vanilla extract
- 2 tablespoons butterscotch, chocolate, or your favorite syrup or sauce (24g CHO)

Put all ingredients in a blender. Blend at low speed for 10 seconds.

(Total Carb = 66g or 4.5 Carb choices)

*For variety, add ½ cup banana or 1 tbsp smooth peanut butter (will increase CHO content)

Super Milkshake

- ½ cup fortified milk (6g CHO)
- ½ cup high fat ice cream (18g CHO)
- 1 packet instant breakfast (28g CHO)

(Total Carb = 52g or 4 Carb Choices)

Table 7 SAMPLE SEMI-LIQUID MEAL PATTERN

BREAKFAST (4 Carb choices plus milkshake or supplement carbs*)

Citrus Juice (1/2 cup: 15g CHO)
Thinned Cooked Cereal (1/2 cup cooked cereal: 19g CHO)
Milk (1 cup: 12g CHO)
Coffee or Tea (unsweetened: 0g CHO)
Cream, Sugar (1 tablespoon sugar: 15g CHO)
Liquid Supplement or Milkshake (see suggestions)*

LUNCH AND DINNER (4 Carb choices)

Thinned Soup (1 cup chicken broth: 1g CHO)
Thinned or Puréed Meat or Substitute
Thinned Potato or Substitute (1/2 cup: 15g CHO)
Thinned or Puréed Vegetable (1/2 cup: 5g CHO)
Thinned Dessert or Puréed Fruit (1/2 cup fruit: 15g CHO)
Milk (1 cup: 12g CHO)
Coffee or Tea (unsweetened: 0g CHO)
Cream, Sugar (1 tablespoon sugar: 15g CHO)
Salt and Pepper

SNACK: MID-MORNING, AFTERNOON AND BEDTIME (varies)

Milk or Fruit Juice (1 cup milk or 1/2 cup juice: 15g CHO)
Liquid Supplement or Milkshake (see suggestions)

RESOURCES

- ◆ **Gastroparesis & Dysmotilities Association:** 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**
 - ⇒ **Scroll down to 2005**
 - ⇒ **August 2005 (see article on gastroparesis)**