

# Side Effect Management through Diet and Nutrition

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## Medical Nutrition Therapy Goals

- Prevent or reverse poor nutrition
- Maintain dose and schedule of cancer treatments
- Manage symptoms
- Maintain or improve weight and strength
- Maximize quality of life

## Common Symptoms/Side-effects

- Nausea and/or vomiting
- Loss of appetite, weight loss
- Taste changes and early satiety
- Pain with eating
- Diarrhea
- Constipation
- Fatigue
- Pancreatic exocrine insufficiency

## Nausea and vomiting

- Anti-nausea medications
- Small frequent meals (6-8 per day)
- Eliminate offending odors
- Keep dry foods in frequent used area
- Choose foods that are not overly sweet, greasy, fried or spicy
- Cool foods or foods at room temperature
- Good oral care

## Loss of Appetite

- Size, number and timing of meals during the day, temperature of foods
- Stress at mealtime
- Preparation, presentation, and plan day before
- Light exercise and activity
- Add flavor; taste changes?
- Nutrient dense foods
- Medication?

## Early Satiety

- Find creative ways to alleviate gas and bloating
- Try liquids in between meals
- Small servings, more often
- High fat or fried foods may be problematic for some
- High fiber foods may be problematic

## Nutrition Management of Taste Changes

- Rinse mouth with baking soda & water solution or water with lemon (if no mouth sores).
- Metallic taste: use plastic or glass utensils and serving ware.
- To enhance dull taste use tart flavors: pickles, lemons, vinegar, etc.
- Try new foods or foods previously disliked.

## Nutrition Management of Pain with Eating

- Plan small frequent meals.
- Avoid high fiber foods.
- Avoid fried food and other high fat foods.
- Chew food well.
- Take pain medication proactively.

## Nutrition Management of Diarrhea

- Discuss with your medical team which medications may be appropriate. Pancreatic enzymes? Lactase enzymes? Anti-diarrhea?
- During diarrhea (of any cause) limit/avoid:
  - Lactose containing dairy products (However, products with live active cultures: yogurt and buttermilk are okay.)
  - High fiber foods: whole grains, raw fruits with thick peels, raw vegetables
- Get plenty of fluids

## Practice based recommendations for diarrhea

- Calcium carbonate -twice daily; bulk stool.
  - Calcium citrate if increased gas, benefit not same
- Soluble fiber- Guar gum (Benefiber®), psyllium (Metamucil®), or methylcellulose (Citrucel®); use concentrated form (1 tsp in 2 ounces water) after meals; help “gel” stool.

Petzel, M; Meddles J: Medical Nutrition Therapy for patients with Pancreatic Cancer. Oncology Nutrition Connection. 2005; (2): 15-18.

## Practice based recommendations continued for diarrhea

- Deodorized tincture of opium: slow intestinal transit; an appropriate dose often 0.3cc two to three times daily
- Loperamide (Imodium®) or diphenoxylate (Lomotil®) to slow transit time.

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## Management of Constipation

- Due to decreased activity, decreased food and fluid intake, pain, fatigue, pain medications
- Plenty of fluids. Include hot fluids such as tea, coffee, and prune juice.
- Be active
- Include high fiber foods in your diet such as fruits, vegetables, legumes, and whole grains.
- Consider use of laxatives or stool softeners.
- Limit gas forming foods, carbonated beverages, straws, chewing gum

## Nutrition Management of Fatigue

- Schedule meals and snacks (6-8 times per day)
- Be active:
  - Try for a total of 30 minutes per day of activity.
  - Walking is great.
  - Break activity into small increments (5 or 10 minutes at a time, totaling 30 minutes per day).

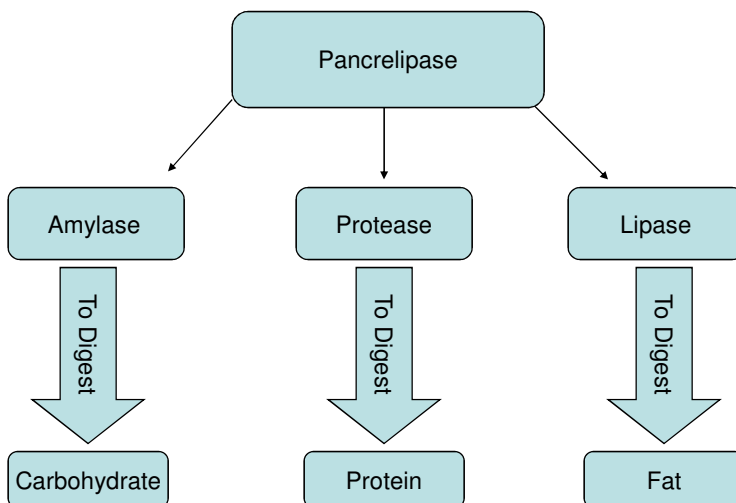
## Symptoms of Pancreatic Exocrine Insufficiency

- Feelings of indigestion
- Cramping after meals
- Large amounts of gas
- Foul smelling gas or stools
- Floating stools or greasy/fatty stools
- Frequent stools
- Loose stools/diarrhea
- Unexplained weight loss

## Pancreatic Enzymes (Pancrelipase)

- Patients who have pancreatic insufficiency due to disease, treatment, or surgery should take supplemental pancreatic enzymes.
- Goals
  - Eliminate diarrhea
  - Restore adequate nutrition
  - Prevent weight loss
  - Decrease symptoms

### What is pancrelipase?



## What does the number after the name mean?

- The number helps identify the units of lipase in each capsule/tablet.
- To know how many units of lipase are in your pill multiply the number after the name by 1000.
- Examples:
  - Ultrase ® MT 12 ( $12 \times 1,000$ ) = 12,000 units of lipase per pill.
  - Creon ® 10 ( $10 \times 1,000$ ) = 10,000 units of lipase per pill.

## Finding the right enzyme and how much to take.

- Every person is different and needs different amounts of pancreatic enzymes. Amounts needed may vary depending on disease and treatment.
- One brand/batch may work better than another so it is best to start with one brand find the dose that works for you and stick with it.
- Units of lipase can be used to determine a starting dose of enzymes.

## Enzyme Dosage: Starting

**4000 units lipase per 5-7 grams fat**

(Ottery F, Oncology. 1996;9S:26-32)

And if you have too much on your mind to count fat grams...

**Start by taking 20,000-30,000 units of lipase before/with meals and 10,000 units of lipase before/with snacks.**

## How to Optimize Enzymes:

- It is very important that enzymes be taken at the beginning of the meal or snack. (first bite)
- For optimal use take throughout the meal/snack. (Sarnier M, World J Surg. 2003;27:1192-1195)
- Enzymes generally do not work well if forgotten and taken at the end of a meal.
- Don't take with antacids or iron supplements.
- Do take a daily medication to reduce stomach acid; proton pump inhibitor (PPI) or H2 blocker.

## How to Optimize Enzymes: Continued

- For best results you should take with every meal and snack that contains fat:
  - Meat
  - Dairy
  - Bread
  - Snacks
  - Desserts
- Capsules should not be sprinkled on dairy products

## Enzyme Dosage: Titration

- Amount of enzymes needed depends on your diet and the speed of your GI tract.
- After starting enzymes follow guidelines for optimization of enzymes and continue to increase amount of lipase per meal/snack until a level is achieved that prevents s/s of pancreatic insufficiency.
- Do not exceed 75,000 units of lipase per meal without discussion with your doctor.

## Trouble Shooting...

- Open capsule and take contents of capsule with 1-2 spoonfuls of soft (non dairy) food. DO NOT chew.
- Tablet form may act more rapidly-but less potent

## Pancreatic Enzymes: Side effects of too many

- Constipation (most common)
  - Nausea
  - Abdominal Cramps
  - Diarrhea
- (Careful not to confuse with symptoms of inadequate enzyme use or chemotherapy or radiation treatment.)

## Can I use a generic?

- FDA:
  - no brand for brand standardization
  - generics may be less standard batch for batch
  - by Spring 2008 companies must be compliant with standardization.

Brand Name Enzymes	Manufacturer
Creon®	Solvay Pharmaceuticals, Inc.
Pancrease®, Pancrease® MT	Ortho-McNeil Pharmaceutical, Inc.
Pancrecarb® MS	Digestive Care, Inc.
Ultrase®, Ultrase® MT, Viokase®	Axcan Scandipharm, Inc.

## What about enzymes as dietary supplements?

- Not regulated by FDA, no requirement of standardization or purity.
- Plant based enzymes: papain and bromelain- OK, may complement Rx.

## Lactase: The Other Enzyme

- Lactase: the enzyme that breaks down lactose (natural sugar from milk/milk products).
- Individuals who were not previously lactose intolerant may be after surgery or antibiotic use.
- Lactase (Lactaid®): If intolerant of lactose you may benefit from additional enzyme.
  - over the counter
  - help with the digestion of lactose (in milk, ice-cream, cheese, and other dairy products).

## What should I eat?

- Protein
  - Lean cuts of meat
  - Beans, peas, lentils
  - Low-fat or fat-free dairy, eggs
  - Meat alternatives (tofu, veggie burgers, etc.)
  - Protein powders
- Fruits, vegetables, complex carbohydrates
- Calories:
  - Fats: (as tolerated)
    - Olive, canola, peanut oil
    - Avocado
    - Olives

## What should I drink?

Most patients require 6 to 12 cups per day of non-alcoholic, non-caffeinated fluid per day to maintain adequate hydration.

(8 oz = 1 cup)

- Water
- Decaffeinated tea/coffee
- Popsicles
- Broth/Soup
- Sports drinks, children's electrolyte drinks
- Juice
- Caffeine-free soft drinks
- Gelatin
- Liquid nutrition shakes

## Liquid Nutritional Supplements

Non-diabetic: such as Boost Plus® , Ensure Plus® , Carnation® Instant Breakfast ® , Resurgex Select ® .

Diabetic: Boost Glucose Control®, Glucerna® .

Specialized (Cancer Induced Weight loss): Resource Support® .

Note: products above are examples of products available and lists are not all-inclusive.

## Herbal/Vitamin/Mineral Supplements

General:

**\*\*Discuss with your medical team.\*\***

Resources:

ConsumerLab: independent product testing  
<[www.consumerlabs.com](http://www.consumerlabs.com)>

## Herbal/Vitamin/Mineral Supplements

Resources continued:

The National Institutes of Health Office of  
Dietary Supplements-

<http://dietary-supplements.info.nih.gov>

M.D. Anderson Complementary/Integrative  
Medicine Education Resources-

[www.mdanderson.org/departments/cimer](http://www.mdanderson.org/departments/cimer)

## Herbal/Vitamin/Mineral Supplements: Curcumin

- Curcumin substance found in turmeric.
- Lacking reliable human studies. Some early animal and laboratory studies report anti-cancer properties.
- Safety: may cause allergic reaction, heartburn/GI upset, increased risk of bleeding, etc (see resources list for full info).
- Safe as seasoning for food.

## Herbal/Vitamin/Mineral Supplements: Essiac Tea

- Combination of herbs usually: burdock root, slippery elm bark, sheep sorrel leaves, and Turkish rhubarb root. Some preparations may contain additional herbs.
- NO human trials. Some trials on human cancer cells but findings are inconsistent and most of those positive where obtained at higher concentrations than recommended or achievable by people.
- Safety: may cause allergic reaction, heartburn/GI upset, multiple potential herb/drug interactions.

## Supplements: Fish Oil

- Some evidence that fish oil may decrease cancer induced weight loss. Specifically eicosapentaenoic acid (EPA), a building block of fish oil has been show beneficial.
- DHA and EPA
- Anti-inflammatory response
- May inhibit cancer cell growth (Tinsdale MJ, Biochem Pharmacol. 1991;41;103-107) and enhance apoptosis (Lai PB et al, Br J Cancer.1996;74:1375-1383)

## Supplements: Fish Oil

- Studies suggest gains or maintenance of weight and lean body mass, reduced REE, improved LFTs, reduced ICU stay, improved appetite and dietary intake, increased physical activity and improved quality of life.
- Other studies suggest no difference (Fearon KC. Gut 2003;52:1391-2.)
- Studies show optimal dose of 2000 mg/day of EPA.

Smith, T.R.: Effect of omega 3 fatty acids on outcomes in patients with pancreatic cancer. Oncology Nutrition Connection. 2005; (2): 19.

## Sources of Omega-3's

- Mackerel, lake trout, herring, sardines, albacore tuna, salmon
  - Supplemental drinks (2 servings per day)
    - Resource Support ® (Novartis Medical Nutrition®)
  - Fish Oil Supplements
    - Nordic Naturals
    - Carlson Super Omega
    - Coromega
- Review [www.consumerlabs.com](http://www.consumerlabs.com) for reports of safety and potency.

## Pancreatic Resources

- Pancreatic Cancer Action Network, Inc  
[www.pancan.org](http://www.pancan.org)
- American Cancer Society [www.cancer.org](http://www.cancer.org)
- National Cancer Institute  
[www.nci.nih.gov/cancer information/cancer type/cancer](http://www.nci.nih.gov/cancer_information/cancer_type/cancer)
- American Institute of Cancer Research  
[www.aicr.org](http://www.aicr.org)
- Caring 4 Cancer [www.caring4cancer.com](http://www.caring4cancer.com)

## Resources

- Registered Dietitian: request a consult at your cancer center, if none available contact PanCAN or the American Dietetic Association ([www.eatright.org](http://www.eatright.org))
- Call PanCAN or visit website for tip sheets, booklets, recipes, etc.



## Resources: continued

### Cookbooks:

- Eating Well Through Cancer (by Clegg and Miletello)
- The American Cancer Society's Healthy Eating Cookbook
- *Betty Crocker's Living With Cancer Cookbook* (by Ghosh, Carson and Cohen)
- *Month of Meals: Meals in Minutes* (by American Diabetes Association and American Dietetic Association)

## In Summary: Nutritional Implications

- Weight loss
- Anorexia and cachexia
- Fat malabsorption and micronutrient malabsorption
- Altered macronutrient metabolism
- Treatment related effects

## Nutrition Goals

- Prevent or reverse poor nutrition
- Maintain dose and schedule of cancer treatments
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## In Summary

- Pancreatic cancer can have a profound effect on weight loss
- Anorexia and fat malabsorption can contribute significantly to malnutrition in the pancreatic cancer patient
- The goal of nutrition therapy is to avoid or reverse the catabolic effects of pancreatic cancer
- Meeting the nutritional challenges of cancer patients can improve response to treatment, support immune function and improve quality of life.

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# Questions