

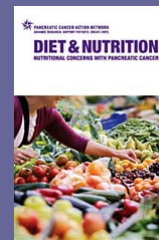
Nutrition and Pancreatic Enzymes for Side Effect Management

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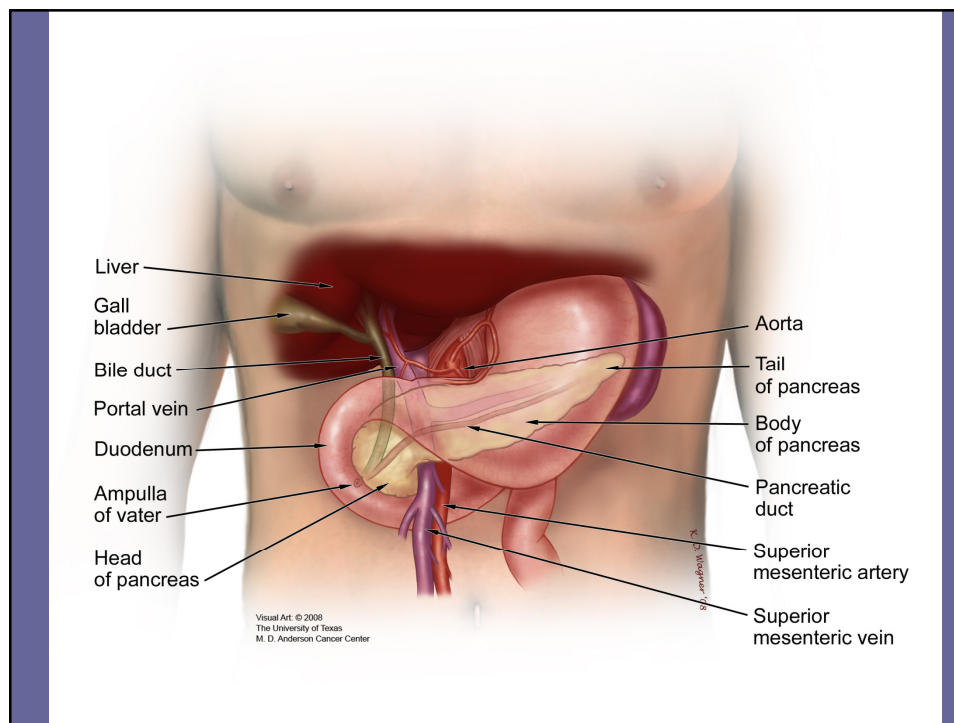
Nutrition Therapy Goals

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

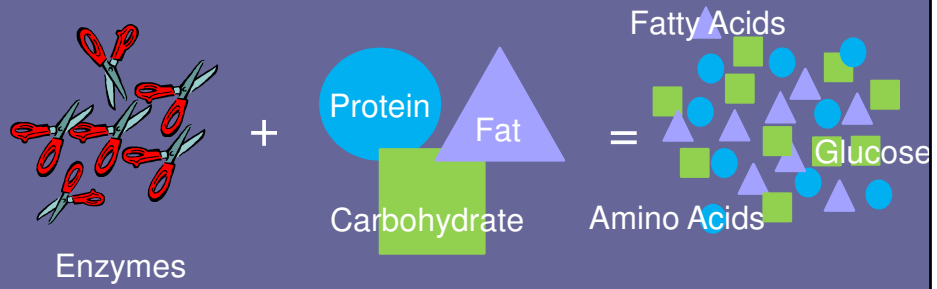


Role of the Pancreas

- Produce enzymes to help digest food to be transported in blood stream
- Produce insulin to help transfer glucose from the blood to the cells where it is used for energy.

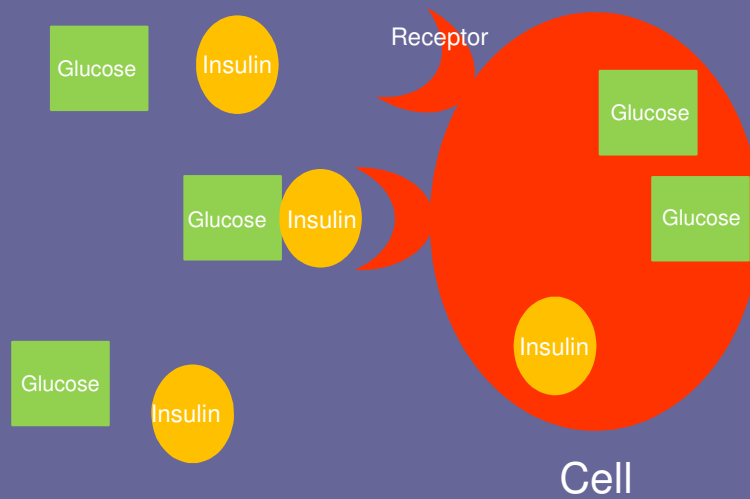


Pancreatic Enzymes



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Insulin



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Common Side Effects

- Diarrhea
- Pancreatic exocrine insufficiency
- Glucose intolerance, diabetes
- Nausea and/or vomiting
- Loss of appetite, weight loss

Common Side Effects (continued)

- Taste changes
- Early satiety
- Constipation

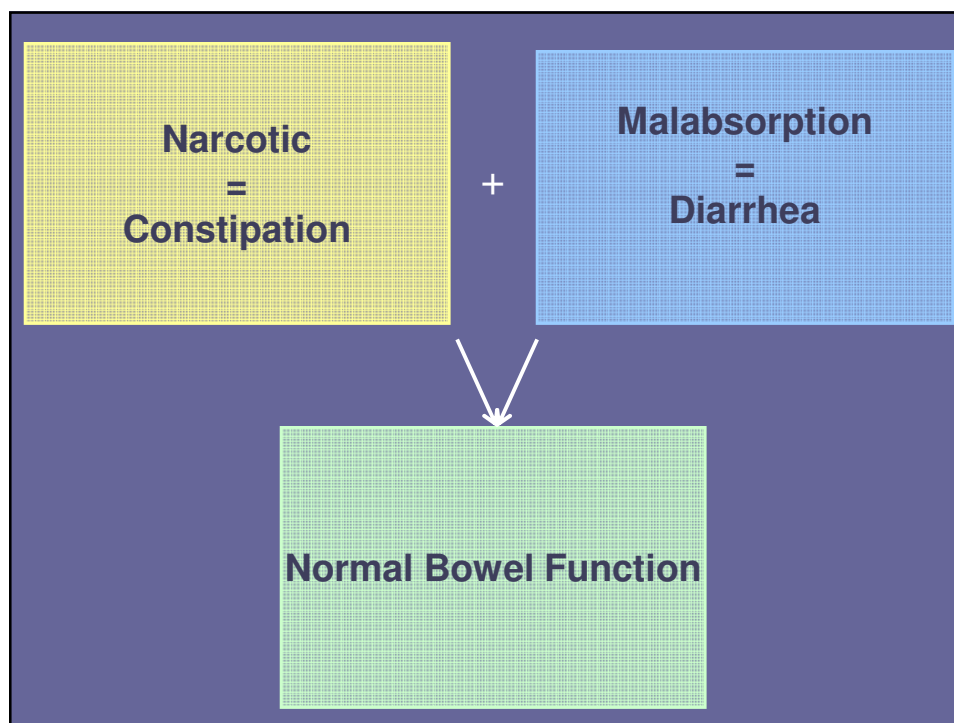
Pancreatic Enzymes



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





How to Optimize Enzymes:

- Take at the beginning and throughout the meal/snack
- Don't take at the same time as antacids or iron supplements
- If prescribed by your doctor, take acid reducing medication daily.

The Right Enzyme and how much to take

- Find the brand and the dose that works for you and stick with it.
- Start:
 - Meals: 20,000-40,000 units of lipase per meal
 - Snacks: 10,000-20,000 units of lipase per snack

Enzyme Dosage: Titration

- Increase until pancreatic insufficiency symptoms are minimized/eliminated
- Maximum: 2500 units of lipase per kilogram per meal (or 10000 units of lipase per kilogram per day)

What does that really mean?

- 60 kg (130 lb) woman
- Max daily dose = weight x 10,000 L.U.

$60 \times 10000 = 600,000$ lipase units/day =

48 capsules Creon 12,000

Or **60 capsules** Zenpep 10,000

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.)

Symptom Management

Common Side Effects

- Diarrhea
- Constipation
- Nausea and/or vomiting
- Early satiety
- Excessive gas
- Taste Changes
- Poor appetite

Diarrhea

- Work closely with medical team (multiple causes of diarrhea):
 - Treatment Induced
 - Lactose Intolerance
 - Bacterial Overgrowth
 - Pancreatic/Digestive Insufficiency
 - Dumping syndrome (after Whipple or gastric bypass)

Nutrition Therapy for Diarrhea

Independent of cause

Limit or avoid:

- Lactose (or add lactase)
- Insoluble fiber
- Foods sweetened with sugar alcohol
- Sugar sweetened beverages

Nutrition Therapy for Diarrhea

Independent of cause

Increase:

- Soluble fiber
- Fluids

Probiotics for Diarrhea

- Sources of probiotics:
 - Foods
 - Dietary Supplements

Constipation

- Hot fluids
- Include high fiber foods
- Limit gas forming foods, carbonated beverages, straws, chewing gum
- Bowel regimen may be warranted

Nausea/Vomiting

- Eliminate offending odors
- Dry crackers/toast
- Avoid overly sweet, greasy/fried, or highly spiced foods
- Use room temp foods
- Oral care
- Eliminate stress
- Medication

Early Satiety

- Alleviate gas and bloating
- Liquids between meals
- Small servings, more often
- Limit high fat or fried foods
- High fiber foods may be problematic
- Medications

Excessive gas

- Optimize pancreatic enzymes
- Use simethicone (Gas-X) liberally
- Consider Bean-O
- Avoid gas-producing foods:
 - Broccoli, cauliflower, cabbage
 - Onions
 - Beans
 - Carbonated beverages (beer, soda)
- Avoid chewing gum
- Avoid drinking through straws

Taste Changes

- Rinse mouth
- Metallic taste: use plastic utensils and serving ware
- Enhance dull taste use tart flavors
- Try new foods or foods previously disliked

Poor Appetite

- Eat small amounts frequently
- Schedule meals/snacks
- Use liquid supplements/smoothies
- Light exercise
- Alcoholic beverage before meal
- May benefit from medication

Liquid Nutritional Drinks

Regular

- Boost
- Orgain
- Ensure
- Enu

Diabetic

- Glucerna
- Boost Glucose Control

- Home made smoothies
 - Mix in blender
 - Liquid: juice, yogurt, milk, soymilk, etc
 - Fruit and/or cooked vegetables
 - Protein: protein powder, tofu, cottage cheese

What to Eat?

General Nutrition Tips

- Eat small frequent meals (6-8/day)
- Plan meals/snacks the day before
- Get plenty of fluids
- Limit use/portions of fat containing foods
- Choose nutrient dense foods
- Be active

Protein

- Poultry, fish, meat
- Beans, peas, lentils
- Nuts and seeds
- Eggs
- Yogurt, milk, cheese
- Vegetarian alternatives: soy milk, tofu, veggie burgers, protein powders, etc.

Complex Carbohydrate

- Bread, pasta, rice, cereal, etc
- Fruits
- Vegetables
- Dairy products

Fat (as tolerated)

- Nuts and seeds
- Avocado
- Olives
- Oil: canola, olive, peanut

Other fats to use sparingly:

- Butter, stick margarine, hydrogenated oils
(or foods that use these as ingredients)

Fluids

Most patients require 6 to 12 cups per day of non-alcoholic fluid per day to maintain adequate hydration. (8 oz. = 1 cup)

Water

Tea

Juice (100%)

Sports drinks

Milk or dairy alternatives

Broth

Gelatin

Glucose Intolerance/Diabetes

- Medication
- Customize diet
- Limit refined carbohydrates
- Eat carbs in combination with protein, fiber, and fats



Finding a Dietitian

- How to Find a Registered Dietitian:
 - Request a consult at your cancer center
 - Commission on Dietetic Registration
 - Search: List of Board Certified Specialists in Oncology Nutrition by State- www.cdrnet.org
 - Contact the Pancreatic Cancer Action Network
 - Contact The Academy of Nutrition and Dietetics www.eatright.org

Cookbooks

- [Betty Crocker's Living With Cancer Cookbook](#) (2011)
- [What to Eat During Cancer Treatment: 100 Great-Tasting, Family-Friendly Recipes to Help You Cope](#) (2009) by Jeanne Besser
- [The Cancer-fighting Kitchen: Nourishing, Big-Flavor Recipes for Cancer Treatment and Recovery](#) (2009) by Rebecca Katz
- [One Bite at a Time](#) (2009) by Rebecca Katz
- [Eating Well Through Cancer: Easy Recipes & Recommendations During & After Treatment](#) (2006) by Holly Clegg
- [The New American Plate Cookbook: Recipes for a Healthy Weight and a Healthy Life](#) (2005) by The American Institute for Cancer Research