



**Optimizing Nutrition through the Continuum of Care:  
Pancreatic Enzymes, Symptom and Side Effect Management**

September 13, 2016

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**OPTIMIZING NUTRITION THROUGH  
THE CONTINUUM OF CARE:  
PANCREATIC ENZYMES, SYMPTOM AND SIDE EFFECT  
MANAGEMENT**

SEPTEMBER 13, 2016



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## PROVEN BENEFITS OF NUTRITION

“Nutrition intervention improves outcomes in patients with cancer cachexia receiving chemotherapy.”

- Nutrition counselling by a dietitian
- Prescription of oral nutritional supplements

Bauer JD, Capra S. Support Care Cancer. 2005 Apr;13(4):270-4.

## PROVEN BENEFITS OF NUTRITION

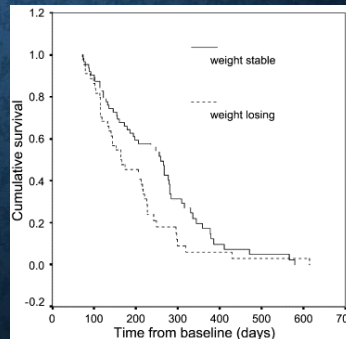
Results after 8 weeks:

- ↑ dietary intake
- ↑ nutrition status
- ↑ physical functioning
- ↑ quality of life
- ↑ trends in weight and muscle mass

## PROVEN BENEFITS OF NUTRITION

“Weight stabilization is associated with improved survival duration and quality of life in unresectable pancreatic cancer.”

- ↑ quality of life
- ↑ survival duration



Davidson W, Ash S, Capra S, Bauer J; Cancer Cachexia Study Group. Clin Nutr. 2004 Apr;23(2):239-47.

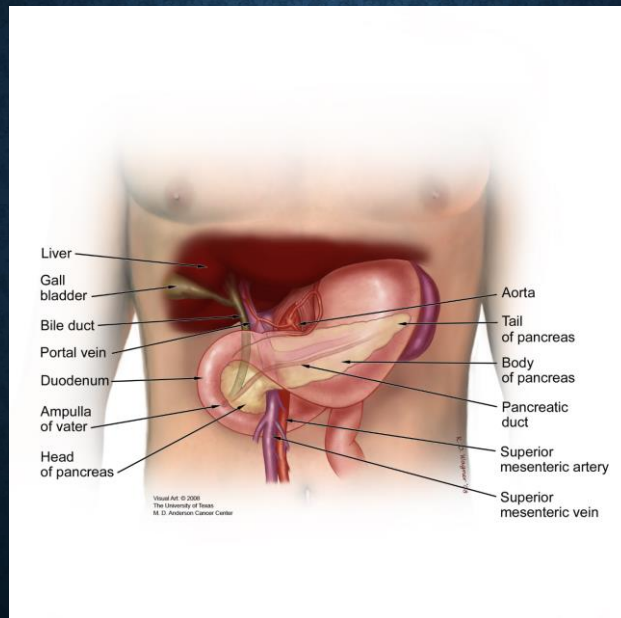
## NUTRITION THERAPY GOALS

- Prevent or reverse poor nutrition
- Maintain dose and schedule of cancer treatments
- Manage symptoms
- Maintain or improve weight and strength
- Maximize quality of life
- Recover from surgery and go on to postop therapy as appropriate

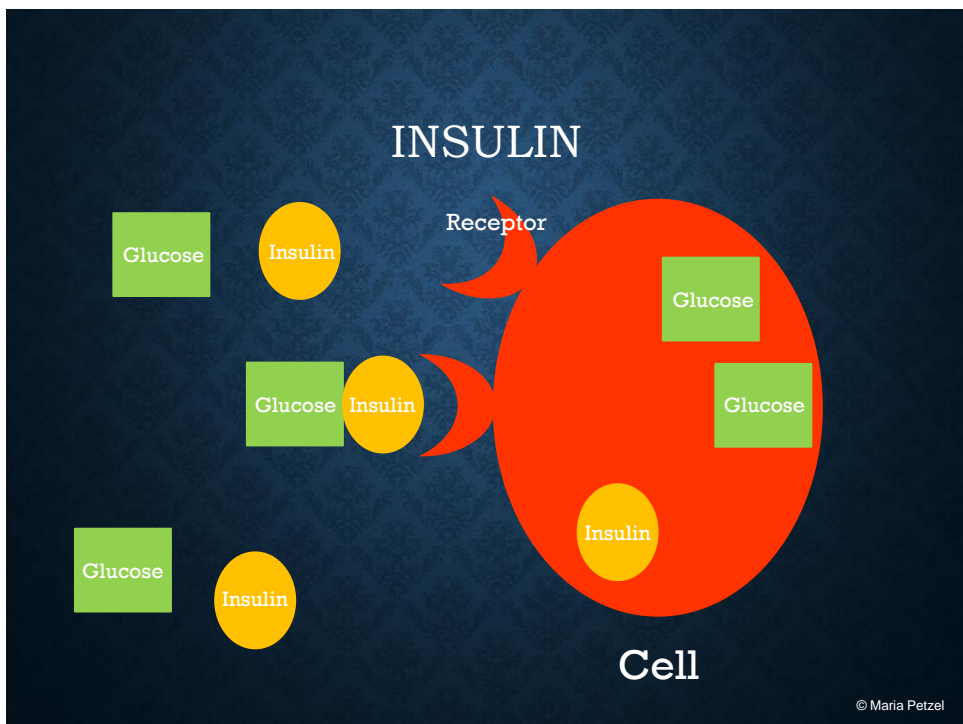
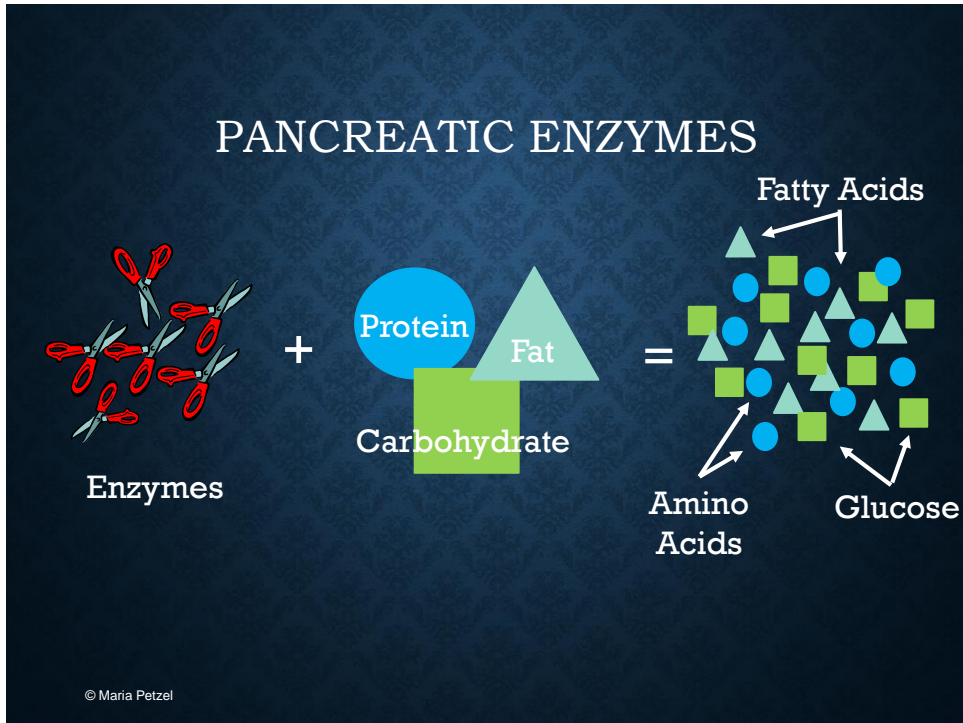


## ROLE OF THE PANCREAS

- 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.







## OUTLINE

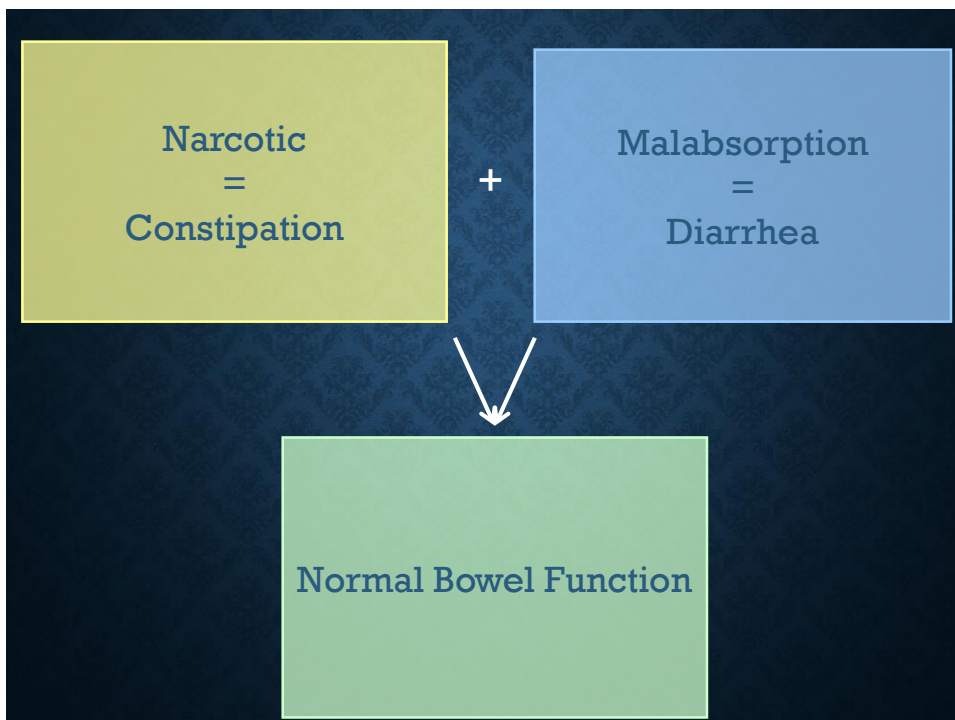
- Pancreatic exocrine insufficiency
- Symptom management
- What to eat
- Long-term nutrition considerations

## 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
- Troubleshooting may include adjustments to timing
- 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

Current Brands Available by Prescription	
- Creon	- Pancreaze
- Pertzye	- Viokase
- Zenpep	



## 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

- Poor appetite
- Early satiety
- Nausea and/or vomiting
- Taste Changes
- Diarrhea
  - Lactose Intolerance
  - Dumping syndrome \*
- Constipation
- Excessive gas
- Diabetes

\* More common with surgery

## POOR APPETITE

- Eat small amounts frequently
- Schedule meals/snacks
- Use liquid calories
- Light activity
- May benefit from 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

## NAUSEA/VOMITING

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



## 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

## 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

Increase:

- Soluble fiber
- Fluids

## LACTOSE INTOLERANCE

- May be temporary
- May be able to tolerate low lactose foods
- Provide lactase enzymes prior to a meal—avoid limiting diet

## DUMPING: SYMPTOMS

- Flushing
- Sweating
- Feeling of low blood sugar
- Loose BM

Generally occur within 2 hours of eating.

## DUMPING

- Limit portion sizes
- Drink liquids between meals
- Avoid foods high in sugar
- Avoid hot liquids
- Add soluble fiber



## CONSTIPATION

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

## EXCESSIVE GAS

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

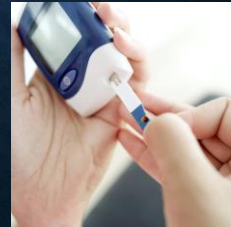


## GLUCOSE INTOLERANCE/DIABETES

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

After treatment/surgery complete:

- Carbohydrate controlled diet
- Use high fiber carb foods as tolerated



## 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

## 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

Sports drinks

Milk or dairy alternatives

Broth

Gelatin

## 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, Greek yogurt



# LOOKING AHEAD- NUTRITION AND SURVIVORSHIP



## AICR GUIDELINES FOR CANCER SURVIVORSHIP

- Be lean but not underweight
- Physically active 30 minutes a day
- Avoid sugary drinks and limit consumption of energy dense foods (high in sugar, low in fiber, and high in fat)
- Variety of fruits, vegetables and whole grains, legumes
- Limit consumption of red meat and processed meats
- Limit alcohol
- Limit salty foods or processed foods high in salt
- Do not rely on supplements to protect against cancer





## PICK ME!



- Citrus
- Apples
- Parsley
- Grapes
- Flaxseed
- Walnuts
- Soy
- Dark Green Leafy
- Winter squash
- Broccoli and cruciferous vegetables
- Legumes, dry beans, peas and lentils
- Cranberries
- Blueberries
- Cherries
- Tea
- Whole grains

## MAINTAIN OPTIMAL NUTRITIONAL STATUS

- Set goal weight
- Daily MVI and mineral supplement
- For Bone Health: Calcium 500-1000mg/D and Vitamin D at 600-1000IU/D as warranted
- Ongoing monitoring of fat malabsorption
- May need acid reducing medication
- Manage Diabetes Mellitus
  - Diabetes Educator for comprehensive teaching

## MONITORING FOR VITAMIN AND MINERAL DEFICIENCIES

- Vitamin B12
- Iron
- Ferritin
- Vitamin D or 25OHD
- If suspect severe malnutrition or malabsorption, may check Vitamins E, A, K, as well as zinc, copper and selenium
- Bone mineral density





# WHAT ABOUT OTHER DIETARY SUPPLEMENTS?



## REGULATORY STANDARDS OF DIETARY SUPPLEMENTS

- Premarket notifications to the FDA
- Proof of Efficacy
- Proof of Safety
- Premarket FDA approval and post marketing surveillance
- Good Manufacturing Practices
- Disease Treatment Claims



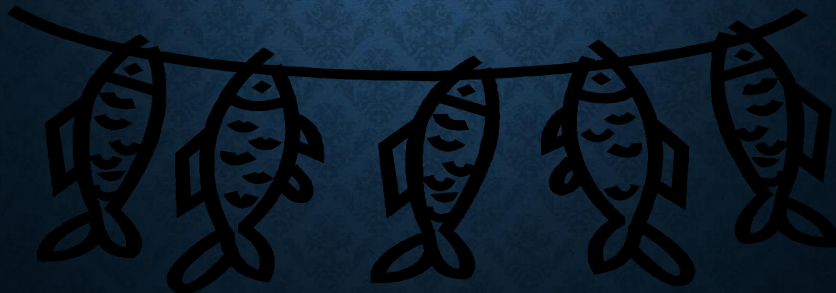
## MISCONCEPTIONS AND RISKS

- “Pose no risk to the general population” and “rarely or never harmed by supplements”
- “More is better”
- “Natural or Standardized”
- Quality concerns are challenging
- False claims
- Other concerns-surgical or procedural complications



## SUPPLEMENTS

- Turmeric
- Omega-3 Fatty Acids
- Probiotics



## TURMERIC/CURCUMIN

- Studies in advanced pancreatic cancer found to be well tolerated
- Combination with some chemotherapy agents found to be safe
- Poor absorption
- May work against some chemotherapy drugs ie cyclophosphamide
- Watch for drug/herb interactions

## OMEGA 3 FATTY ACIDS

- Fish oil, krill oil, cod liver oil, flaxseed oil, linseed oil
- Supplementation for cancer prevention is inconclusive
- Preliminary findings that it may support muscle mass, may increase efficacy and tolerability of chemotherapy
- Doses greater than 3 grams may increase bleeding time
- Do not take if you are taking NSAIDS or Glucocorticoids

## PROBIOTICS FOR DIARRHEA

- Sources of probiotics:
  - Foods
  - Dietary Supplements

## RESOURCES

- ConsumerLab: independent product testing  
[www.consumerlab.com](http://www.consumerlab.com)
- The National Institutes of Health Office of Dietary Supplements-  
<http://dietary-supplements.info.nih.gov>
- Memorial Sloan Kettering Cancer Center Website  
[www.mskcc.org/cancer-care/integrative-medicine](http://www.mskcc.org/cancer-care/integrative-medicine)
- National Center for Complementary and Alternative Medicine  
[www.nccam.nih.gov/](http://www.nccam.nih.gov/)
- U.S. Pharmacopeial Convention  
<http://www.usp.org/dietary-supplements/overview>





## FINDING A DIETITIAN

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

## COOKBOOKS

- 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
- The New American Plate Cookbook: Recipes for a Healthy Weight and a Healthy Life (2005) by The American Institute for Cancer Research
- Online:
  - AICR
  - Cooking Comfort Care
  - Cook for Your Life



READY TO ANSWER  
QUESTIONS...



**Thank you for your participation.**

If you have questions, please contact Patient Central at  
(877) 272-6226 or e-mail [patientcentral@pancan.org](mailto:patientcentral@pancan.org).

[www.pancan.org](http://www.pancan.org)

