Nutritional Challenges Unique to Pancreatic Cancer

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Upon Diagnosis: Potential Nutrition Issues

- Loss of appetite
- Taste changes
- Pain associated with eating
- Fatigue
- Weight loss
- Altered GI function (excess gas, abdominal cramping, loose stools or constipation)
- Vitamin deficiencies
- Elevated blood sugar levels

American Cancer Society; accessed 8/14/2014; National Institutes of Health: Pancreatic Care Information: accessed 8/14/2014.

Common Symptom: Loss of Appetite

- Meal planning with goal of 5-6 small meals a day
- Bigger plate, smaller portions
- Take anti-nausea medications preventively
- Limit high fat, overly fragrant foods
- Room temperature or cold foods work well
- Appetite stimulants
- Drink your calories: supplement drink choices
Types of Supplements

- Boost
- Ensure
- Scandi Shake
- Carnation Breakfast Essentials
- Myoplex
- Muscle Milk
- Bolt House Farms
- Orgain
- Ensure Clear
- Resource Breeze
- Glucerna
- Boost DM
- Smoothies
- Protein Bars

Common Symptom: Taste Changes

- May be induced by: medications, chemotherapy or radiation
- Good oral hygiene
- Salt water rinses
- Use bold flavors
- Avoid metal utensils and aluminum cans
- Avoidance of offending foods
- Be open to try other foods
- Role of zinc supplements
Common Symptoms: Pain & Fatigue

Pain & Fatigue associated with Eating

- Be proactive with pain medications
- Biggest meal in the morning
- Small meals and snacks
- Eat slowly and chew well!
- Shakes & Supplements
- Use of exercise

Tumor Induced weight loss:
- Appetite suppression
- Altered metabolism
- Pancreatic exocrine insufficiency
- Uncontrolled DM
- Use of Medium Chained Triglycerides (MCT), Eicosapentaenoic acid (EPA)

Common Symptom: Bowel Pattern Changes

Google image: accessed 3/21/11

Constipation Causes and Solutions

- Causes:
  - Pain medications
  - Chemotherapy
  - Limiting fiber in diet
  - Pancreatic enzymes

- Symptom Management:
  - Increase fiber rich foods
  - Hydration
  - Limit binding foods
  - Add dairy
  - Use stool softeners/laxatives as prescribed
Common Symptoms: Loose Stools

- Loose stools may be caused by:
  - Exocrine Insufficiency/Malabsorption: color, consistency, odor
  - Chemotherapy changes
  - Radiation changes
  - Lactose intolerance
  - Bacterial overgrowth
    - Role of Fructooligosaccharides
    - Role of Probiotics

How to Manage Loose Stools

- Limit high fat foods
- Limit insoluble fiber
- Limit simple sugars
- Limit sugar alcohols
- Limit Dairy
- Use of anti-diarrheal medications
- Use of pancreatic enzymes

So, What Can You Eat?

- Eat more soluble fiber rich foods: bananas, oats, applesauce
- Eat more binding type of foods: cheese, rice, bananas
- Hydrate properly: water, electrolyte drinks
- Probiotics: tempeh, kefir, yogurt, OTC/prescription brands

Common Symptom: Exocrine Insufficiency

-Symptoms of Pancreatic Insufficiency:
  - Indigestion
  - Cramping after meals
  - Large amounts of gas
  - Loose stools
  - Change in smell of gas and stools
  - Floating or greasy stools
  - Increased frequency of stools

Who Needs Pancreatic Enzymes?

- Tumors in the pancreas
- Following pancreatic surgery
  - Whipple Procedure
  - Total Pancreatectomy
- Obstruction of pancreatic or biliary duct
- Duodenal tumors

Pancreatic Enzymes

- Newer FDA regulations
- Common Brands:
  - Creon ®
  - Zenpep ®
  - Pertzyme ®
  - PanCreaze ®
  - Viokase ®

- Tips for success:
  - Divide doses throughout meal times
  - Do not crush or chew
  - Do not take with dairy rich foods
  - Do not take with iron supplement
  - Take acid reducer medication

http://www.medicaid.nv.gov/Downloads/provider/Pancreatic%20Enzymes.pdf accessed 9/20/14
Pancreatic Enzymes (continued)

- How much do you need?
  - Individualize
  - Trial of different products
  - Calculate amount per meal and snack
    - Meals: 20,000-40,000 units of lipase per meal
    - Snacks: 10,000-20,000 units of lipase per meal
  - Increase as needed
  - May need to use combination of pancreatic enzymes

- What if you take too many?
  - Constipation (not to be confused with narcotic induced constipation)
  - Abdominal cramping
  - Nausea

- If you experience these symptoms talk to your healthcare team.

Elevated Glucose

- Prevalence of diabetes
- Relationship between diabetes and the diagnosis of pancreatic cancer
- Onset of diabetes in pancreatic cancer may be up to 18-24 months before diagnoses of cancer
- New onset hyperglycemia
- Hyperglycemia in previously well-controlled diabetes
- Progressively worsening diabetes control, despite increasing therapy
- Steroid induced during therapy

Types of Diabetes

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<th>Type 1</th>
<th>Type 2</th>
<th>Gestational</th>
<th>Other</th>
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| Autoimmune beta cell destruction of pancreas | Insulin resistance Relative insulin deficiency | Diabetes diagnosed during pregnancy and resolves after pregnancy | *Genetic defects in beta cell function*  
*Pancreatic insufficiency*  
*Cystic Fibrosis*  
*Pancreatitis*  
*Pancreatic Cancer* |

Glucose Goals

- A1c (glycohemoglobin) <7%
- Preprandial (pre-meal) 70-130 mg/dL
- 1-2 hour postprandial (post-meal) <180 mg/dL

Goals should be individualized
Correlation of A1c with Average Glucose

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Diabetes Care, volume 32, supplement 1, January 2011

Short term complications

Prolonged hyperglycemia
Can result in WEIGHT LOSS and DEHYDRATION
Symptoms of Low Blood Sugars

- Shaking
- Fast Heartbeat
- Anxious
- Headache
- Hunger
- Impaired Vision
- Sweating
- Dizziness
- Irritable
- Weakness
- Fatigue

Nutrition After Surgery

Whipple Procedure

- Liver
- Gallbladder
- Stomach
- Pancreas
- Duodenum
- Jejunum cut and attached to hepatic duct
- Jejunum

Fig. 2
Post-op Nutrition Considerations

- May be on tube feeding
- Diet advance from Clear Liquid to low fat, low fiber, low lactose
- Hydration

- Diabetes Management
  - Feeding tube—may need insulin
  - As diet advances, may need insulin
  - 50% diabetes resolves after surgery
- Blood sugars dictate if treatment necessary

Other Considerations

- Supplement B12 and iron as needed
- Adjust pancreatic enzymes
- Supplement Fat Soluble Vitamins
- Monitor Weight
- Monitor Blood Sugars
- Survivorship
Summary

• Proper nutrition is essential to success!
• Prevent weight loss (unless recommended by your MD).
• Manage side effects each step of the way through treatment, including blood sugar management, pancreatic insufficiency and necessary diet modifications.

Select References

References Cont’d.


National Institutes of Health: Pancreatic cancer


Supportive Oncology Online:


Questions & Thank You!

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